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ABSTRACT

The approximately 250 entries contained in this annotated bibliography are a representative sample of studies and thinking on reading and learning disabilities appearing in periodicals, proceedings, monographs, and reports of federal and state agencies in the seventies. The entries are presented in three sections: the nature of reading and learning disabilities; affective, cognitive, linguistic, neurological, and perceptual processes relating to reading and learning disabilities; and diagnosis, remediation, and treatment. (FL)

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LEARNING DISABILITIES WITH EMPHASIS ON READING

An Annotated Bibliography

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Compiled by

Grace E. Lee
California State University at Northridge
and
Allen Berger
University of Pittsburgh

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Introduction

One of the hottest, smoldering issues in reading education concerns the role of learning disabilities. This bibliography has been compiled in an effort to diffuse some heat and bring light. The entries reflect papers appearing in some fifty periodicals; twenty proceedings; and approximately fifty monographs, including dissertations, theses, and reports to federal and state agencies.

The periodicals reflect the areas of child development; general education; linguistics; speech and hearing; optometry; medicine and pharmacology; nursing and psychiatry; and, of course, reading, learning disabilities, and special education. The proceedings reflect conferences and conventions of educators, optometrists, physicians, psychologists, researchers, and others interested in this problem. The monographs include research documents completed at colleges and universities in about half of the United States.

Those interested in papers dealing with reading and learning disabilities in some twenty countries should read *Reading Disabilities: An International Perspective* (1976) edited by Lester and Muriel Tarnopol and published by University Park Press, Baltimore. Readers may also find of value papers by Bakker, de Wit, Evans, Hartlage and Hartlage, Keir and Luria in *Brain Function and Reading Disabilities* (1977), a paperback edited by the Tarnopols and published by University Park Press.

The plethora of writing reflects the amount of interest in this topic. The entire September 1977 issue of *Academic Therapy* is devoted to the secondary LD Student, while the September 1977 issue of *Psychiatric Annals* is devoted to Developmental Dyslexia. Papers reflecting the points of view of reading and learning disabilities and speech and hearing disciplines, along with issues and recommendations for interdisciplinary cooperation, appear in the October 1976

issue of the *Journal of Learning Disabilities*. A substantial portion of the November/December 1977 issue of *Today's Education*, the NEA journal, is devoted to learning disabilities and the teaching of LD students.

The IRA Disabled Reader Special Interest Group held its first conference in November 1977 in St. Petersburg, Florida. Abstracts of papers presented by Kirk, Clements, Dworkin, Betts, and others appear in the group's newsletter, *The Disabled Reader*, Winter 1978.

The public at large is able to obtain information from Closer Look, a project of the U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Education for the Handicapped. Another useful source is *A Reader's Guide for Parents of Children with Mental, Physical, or Emotional Disabilities* published in 1976 by the DHEW Bureau of Community Health Services, Rockville, Maryland 20857.

Because of the amount of writing on this topic, limitations of space have precluded references to textbooks. About 600 annotated references to books can be found in Marietta Chicorel's *Index to Reading and Learning Disabilities: An Annotated Guide*, published in 1976 by the Chicorel Library Publishing Corporation, 275 Central Park West, New York 10024.

The approximate 250 entries on the following pages are a representative sample of studies and thinking on reading and learning disabilities appearing in the literature in the seventies. In preparing this bibliography, we wish to acknowledge with appreciation the constructive suggestions made by readers in behalf of the Publications Committee of the International Reading Association.

GEL
AB

Nature of Reading/Learning Disabilities

While the nature and relationship of reading and learning disabilities are neither clear nor agreed upon by authorities in the field, the following studies are placed in this category for the convenience of readers and researchers. For other overviews, the reader is invited to the annual summaries of investigations relating to reading appearing in the *Reading Research Quarterly* and the annotated bibliographies published by the Council for Exceptional Children.

Ackerman, Peggy T., et al. "Teenage Status of Hyperactive and Nonhyperactive Learning Disabled Boys," *American Journal of Orthopsychiatry*, 47 (October 1977), 577-596.

Reports on three groups of learning disabled boys — hyperactives, normoactives, and hypoactives — who were studied in grade school. All averaged approximately two years' retardation on the Gray Oral Reading Test when first evaluated. When evaluated four years later (at age fourteen), all three groups remained at disadvantage to controls on academic and cognitive measures and on complex reaction time.

Adams, Ruth R. "Learning Disabilities: A Developmental Approach," *Journal of Special Education*, 9 (Summer 1975), 159-165.

In response to Lerner's paper on differences between the fields of reading and learning disabilities, Adams stresses the importance of a developmental view of reading based on the theories and findings of Piaget.

Artley, A. Sterl. "The Controversy: Reading Problem or Learning Disability—What Are the Issues?" paper presented at the twentieth annual convention of the International Reading Association, New York, 1975. ED 110960.

Examines the origin and history of the movement toward helping children labeled as having a reading or learning handicap and discusses various definitions. Concludes that the definition of learning disabilities is related to cerebral dysfunction and similar problems, and the definition of reading disabilities

is related to educational, mental, social, and emotional problems for the classroom teacher.

Balow, Bruce, et al. *Perinatal Events or Precursors of Reading Difficulty* (Interim Report No. 17). Washington, D.C.: National Institute of Education, December 1974, 62 pp. ED 112351.

Critically reviews major studies relating to reading disability and pregnancy complications. Although none of the studies reviewed is free of methodological problems, the evidence supports the hypothesis that perinatal problems, especially birth weight, are related to reading disability.

Brown, Virginia L., and **Morton Botel.** *Dyslexia: Definition or Treatment?* Washington, D.C.: U.S. Office of Education, 1972, 75 pp. ED 058014.

One of a series of ERIC/CRIER state-of-the-art papers reviewing research literature on dyslexia since 1955, concentrating on the late 1960s. Points to difficulty in definition of the term, problems of diagnosis, and treatment approaches to dyslexia. Proposes an analytic framework for use by future theorists and researchers.

Bush, Clifford L., and **Robert C. Andrews.** *Dictionary of Reading and Learning Disabilities Terms.* Matawan, New Jersey: Educational Psychological Associates, 1973, 124 pp. ED 119124.

This dictionary was compiled to serve teachers in the fields of reading and learning disabilities. The entries are alphabetized and include terms from related disciplines; measurement, evaluation, and statistics; linguistics; library science; psychology and learning; education; and medicine, particularly dealing with vision, sensory, and motor functions.

Camp, B.W., and **S.G. Zimet**. "Classroom Behavior During Reading Instruction," *Exceptional Children*, 42 (1975), 109-110.

Found that decreasing reading skill correlated with deviant behavior and occurrence of interruptions. Cautioned teachers to be aware of differing behaviors, possible reasons for such behaviors, and steps to be taken.

Clarke, Louise. *Can't Read, Can't Write, Can't Talk Too Good Either: How to Recognize and Overcome Dyslexia in Your Child.* New York: Walker, 1973, 280 pp. ED 076971.

Starting with the bewildering inability of an apparently normal, healthy child to imitate words when he was two years old, the author traces her son's development through stages of poor motor coordination, restless rhythmic movements, and auditory perceptual confusion in his preschool years; difficulty with reading, spelling, writing, and even verbal communication in his elementary years; and the emotional difficulties these problems created in his high school and college years.

Cohen, S. Alan. "Minimal Brain Dysfunction and Practical Matters Such as Teaching Kids to Read," reprinted from the *Annals of the New York Academy of Sciences*, February 1973, 12 pp. ED 092893.

From research and clinical work conducted over seven years, this paper presents findings which support conclusions that 1) labels are useless, 2) what really matters to the teachers are observed behaviors, 3) etiology of children's learning problems is usually irrelevant to teaching them to read, 4) laws of learning are more effective than theories of development, and 5) one of the most destructive practices in remedial education is the application of basic developmental theory to techniques of teaching.

Douglass, Malcolm P. (Ed.). *Reading between and Beyond the Lines*, Proceedings of the Fortieth Claremont Reading Conference, 1973, 225 pp. ED 119131.

Includes "Medical and Epidemiological Aspects of Reading Disability" by H.R. Huessy, "Can Reading Problems Be Predicted?" by Herold Lillywhite, and "Dyslexia and the Eye" by Eugene Helveston.

Elkins, John. "Learning Disability Research in Australia," paper presented at the nineteenth annual convention of the International Reading Association, New Orleans, May 1974, 17 pp. ED 092928.

Reviews aspects of Australian practices and research activities in learning disabilities conducted over the past decade. An approach which recognizes the interaction of aptitudes and teaching strategy is suggested as being the most efficient.

Elkins, John. "Reading Disability Research in Australia," *Slow Learning Child*, 22 (July 1975), 109-119.

Reviews the status of reading disability research in Australia and cites overlapping services and responsibilities regarding reading and learning disabled students in the United States.

Friedman, Nathan. "Is Reading Disability a Fusional Dysfunction?" *Journal of the American Optometric Association*, 45 (May 1974), 619-622.

Contends that dyslexia as presently offered to explain learning disabilities is a questionable phenomenon. Attributes reading difficulties to physiological problem of fusional-eye movement stress.

Gold, Lawrence, and **Dale M. Huebner.** "An Investigation of the Incidence of Developmental Dyslexia and Selected Factors Associated with the Condition: Results of a Two Year Study," paper presented at the International Reading Association Convention, Anaheim, 1970, 10 pp. ED 040828.

Examines factors associated with developmental dyslexia in pupils tutored in a Title III funded learning disability center. Factors associated with general immaturity, emotional problems, and family pathology were prevalent.

Hartman, Nancy, and **Robert K. Hartman.** "Perceptual Handicap or Reading Disability?" *Reading Teacher*, 26 (April 1973), 684-695.
Contends that a false dichotomy has been created because of different terms, diagnostic approaches, and remedial reading techniques. The need is suggested for more coordinated communication among reading specialists, learning disability personnel, and speech therapists. Such cooperation would take the confusion out of much of the approach that now attempts remediation and correction of reading disability.

Herrick, Michael J. "Disabled or Disadvantaged: What's the Difference?" *Journal of Special Education*, 7 (Winter 1973), 381-386.
Concludes that if culturally different children behave educationally, emotionally, and socially in school similarly to the learning disabled children (e.g. manifest similar problems of linguistic performance and degrees of mental dysfunction) then special education must recognize that they cannot be excluded from the classification of students with learning disorders.

Jakupcak, Michael J. "Areas of Congruence in Remedial Reading and Learning Disabilities," *Journal of Special Education*, 9 (Summer 1975), 155-157.
In response to J. Lerner's paper on differences between the fields of reading and learning disabilities, suggests that differences be minimized by using behavioral terms to describe learning problems, using task analysis to pinpoint both the whats and hows of teaching, and developing interdisciplinary training programs.

Jampolsky, Gerald G. "Witches' Tales around Reading Problems," paper presented at the annual conference of the California Medical Association, February 1972, 17 pp. ED 102500.
Describes how some children with learning problems feel about themselves and discusses some clinical opinions that have been developed at The Child Center, Kentfield, California.

Karnes, Lucia R. "Symptoms and Remediation of the Dyslexic Child," paper presented at the World Congress on Dyslexia, November 1974, 28 pp. ED 105373.
Defines dyslexia as a learning disability or a dysfunction in the psychological processes involved in using spoken or written language. Relates experiences identifying and dealing with various forms of dyslexia at the Orton Reading Center at Salem College in North Carolina.

Kline, Lloyd W. "Follow the Yellow Brick Road or Lost in the Forest of Professional Educational Argument," *Journal of Special Education*, 9 (Summer 1975), 167-177.
Responds to Lerner's paper on differences between the fields of reading and learning disabilities by questioning her logic in some of the distinctions made and the definitions provided.

Kirk, Winifred D. "The Relationship of Reading Disabilities to Learning Disabilities," *Journal of Special Education*, 9 (Summer 1975), 133-137.
Responds to Lerner's article on differences between the fields of reading and learning disabilities by suggesting that Lerner fails to distinguish between corrective reading and remedial reading, misunderstands learning disabilities as including only learning problems with neurological bases, and misconstrues task analysis as a diagnostic procedure.

Lerner, Janet W. "Remedial Reading and Learning Disabilities: Are They the Same or Different?" *Journal of Special Education*, 9 (Summer 1975), 119-131.
Presents a point of view about the relationship between remedial reading and learning disabilities. Discusses existing differences between the fields of reading and learning disabilities. Makes distinctions and provides and supports training program definitions in both areas.

Lerner, Janet W. "Response to Critics: Reading and Learning Disabilities," *Journal of Special Education*, 9 (Summer 1975), 179-181.
In rebuttal to seven responses to a paper on differences between the fields of learning disabilities and reading, Lerner notes the disagreement among the respondents as to points of overlap and difference and reaffirms that two fields of study exist.

List, Lynne. "Much Ado About Something," *Journal of Special Education*, 9 (Summer 1975), 139-143.
Responds to Lerner's article on differences between the fields of reading and learning disabilities, by distinguishing between reading problems and reading disability, suggesting that there are many differences within each field, and noting the compatibility of remedial practices even though theoretical concepts are different.

Naidoo, Sandhya. *Specific Dyslexia*, a research report of the Invalid Children's Aid Association (London, England) Word Blind Centre for Dyslexic Children. New York: Halsted Press, 1972, 165 pp.
Based on study of 98 boys of at least average intelligence with severe reading and spelling problems, the report provides data relating to their developmental and perinatal histories, family and school factors, physical and neurological status, visual perception, and other factors. Though the patterns of disability vary, there is evidence to suggest that a sequencing disability may underlie the reading and spelling retardation.

Newcomer, Phyllis. "Learning Disabilities: An Educator's Perspective," *Journal of Special Education*, 9 (Summer 1975), 145-149.
In response to Lerner's article on differences between the fields of reading and learning disabilities, Newcomer stresses that the essential role of the LD specialist is that of an educator.

Novak, Josephine. "Dyslexia: What Is It?" a series of nine articles which appeared in *The Evening Sun* (Baltimore), and which won the media award given by the International Reading Association, 1971, 16 pp. ED 068901.

Articles summarize the methods of identifying and teaching dyslexic children and discuss the school's common failure to identify them. Several case histories are presented. Also includes an overview of current methods of research and education.

Park, George E., and **Kenneth A. Schneider.** "Thyroid Function in Relation to Dyslexia (Reading Failures)," *Journal of Reading Behavior*, 7 (1975), 197-199.

Compares 53 dyslexics (47 boys and 6 girls ranging in age from seven to fifteen years, all with average or above intelligence) with 18 boys of similar age range who were reading at levels consistent with their mental abilities. Preliminary analyses of laboratory data indicate an association of dyslexia with a systemic change in metabolism.

Sartain, Harry W. "Instruction of Disabled Learners: A Reading Perspective," *Journal of Learning Disabilities*, 9 (October 1976), 489-497.

Discusses the relationship between reading and learning disabilities, causes and correlates of reading disability, and misunderstandings about special reading and learning disability programs. Suggests that teachers and specialists in both fields join in their efforts to improve services to reading disabled children.

Satz, Paul, and **Gary K. Van Nostrand.** *Developmental Dyslexia: An Evaluation of a Theory*. Gainesville, Florida: University of Florida, 1971, 50 pp. ED 059557.

Reviews a theory advanced by Satz and Sparrow which purports to explain the nature and cause of specific developmental dyslexia. The theory postulates that developmental dyslexia reflects a lag in the maturation of the brain (left hemisphere). Suggests that the nature of the handicap will vary largely as a function of chronological age.

Schiffman, Gilbert B. "Philosophical Implications for the University," paper presented at the fifty-fourth annual International Convention of the Council for Exceptional Children, Chicago, 1976, 13 pp. ED 122574.

A survey of 786 teachers of reading showed that 21 percent of the teachers had only two or more graduate courses in reading, and that only 4 percent or 2 percent of the teachers, respectively, had taken courses in learning disabilities or language development.

Senf, Gerald M. "Now Whom Would You Hire to Teach a Failing Reader?" *Journal of Special Education*, 9 (Summer 1975), 151-154.

Responds to Lerner's paper on differences between the fields of reading and learning disabilities. Regrets Lerner's failure to consider such questions as whether resources are being wasted supporting training programs in both areas and whether the target population of failing readers is the same for both disciplines.

Vellutino, Frank R. "Psychological Factors in Reading Disability," paper presented at the American Educational Research Association, Chicago, April 1975, 28 pp. ED 116422.

Reviews three types of etiological theories of dyslexia: theories of visual perceptual deficit, theories of difficulties with sensory integration, and theories of verbal deficiencies. Concludes that recent findings weigh heavily against perceptual deficit theories of reading disability as suggested by Orton and others; that the findings relating to the sensory integration theory of Birch suggest the need for further research; and that the author's research and that of others support the verbal or linguistic deficit theory.

Vellutino, Frank R. "Alternative Conceptualizations of Dyslexia: Evidence in Support of a Verbal-Deficit Hypothesis," *Harvard Educational Review*, 47 (August 1977), 334-354.

Examines critically the foci of four prevalent explanations for reading failure in children: visual perception, intersensory integration, temporal-order perception, and verbal functioning. Applies findings from own investigations and selected research in demonstrating the relationship between reading problems and dysfunction in the semantic, syntactic, or phonological aspects of language as the most convincing explanation.

Vernon, Magdalen D. "Varieties of Deficiency in the Reading Processes," *Harvard Educational Review*, 47 (August 1977), 396-410.

Argues that reading disability can result from deficiencies in different psychological processes. Presents a fourfold classification scheme of categorizing all poor readers: 1) deficiency in the capacity to analyze complex sequential visual and/or auditory linguistic structures, 2) difficulty in the linking of visual and auditory-linguistic structures, 3) inability to establish regularities in variable grapheme-phoneme correspondences, and 4) inability to group recognizable words into meaningful phrases.

Wiederholt, J. Lee. "Historical Perspectives on the Education of the Learning Disabled," in L. Mann and D. Sabatino (Eds.), *The Second Review of Special Education*. Philadelphia: JSE Press, 1974. Reprinted by the Division for Children with Learning Disabilities of the Council for Exceptional Children, 1974, 50 pp.

Traces education for learning disabled from the early 1800s with special attention to the rapid growth of the field in the 1960s and early 1970s.

Wright, Loyd S. "Conduct Problem or Learning Disability?" *Journal of Special Education*, 8 (Winter 1974), 331-336.

Forty-seven third grade boys with conduct problems were administered a battery of tests to determine how many had reading problems and central processing dysfunctions and to determine the correlations between their reading performance and 1) central information processing abilities, 2) race, 3) social class, and 4) maternal employment.

Affective

Affective associations in learning form the basis for personal involvement with reading activities. Of particular interest here is the focus on socioemotional aspects of learning with attention to self-concept.

Abrams, Jules, and **Wendy Smolen**. "On Stress, Failure, and Reading Disability," *Journal of Reading*, 63 (June 1972), 253-257.

Suggests that a child who begins school with a view of himself as a failure will function in such a way as to maintain this self-concept, thereby failing at most developmental tasks including reading.

Black, F. William. "Self-Concept as Related to Achievement and Age in Learning Disabled Children," *Child Development*, 45 (December 1974), 1137-1140.

Investigates performance on a standardized test of self-concept with matched samples of normal and retarded readers. Self-concept test performance was found to be significantly and negatively related to age, school grade, and each measure of achievement.

Farmer, C.R., and **S.L. Garfield**. "The Relationship between Ability to Read and the Meaning and Expresson of Emotion," *Journal of Learning Disabilities*, 4 (1971), 19-23.

Found that for lower-class children who behave inappropriately, expression of feeling is not related to reading difficulties. Rather, effects of a competitive classroom may overburden some students with feelings of dissatisfaction with their performance resulting in the need for inappropriate attention-getting devices.

Glick, Oren. "Some Social-Emotional Consequences of Early Inadequate Acquisition of Reading Skills," *Journal of Educational Psychology*, 63 (June 1972), 253-257.

Involved 270 third graders in an attempt to determine the relationship between early failure in reading and subsequent changes in attitudes, including self-concept. Found that negative changes in self-concept were experienced by poor male readers while few positive changes occurred in good male readers. In contrast, good female readers experienced positive self-concept changes while poor female readers incurred few negative consequences.

Holmes, Donald. "Disturbances of the Preschool and the Very Young School Child," *Journal of School Health*, 45 (April 1975), 210-216.

Cites a young boy (a nonreader) who learned to read and became a straight A student after suddenly working through an emotional block regarding his mother.

Peck, Bruce B., and **Thomas W. Stackhouse.** "Reading Problems and Family Dynamics," *Journal of Learning Disabilities*, 8 (October 1973), 506-511.

Compares 15 families in which one male (nine to thirteen-years-old) was an identified problem reader with 15 normal families on a conjoint decision-making task. Reading problem families took longer to reach decisions, spent a greater percentage of their decision time in silence, and evidenced fewer exchanges of explicit information and more irrelevant transactions.

Quandt, Ivan. "Relationships among Reading Self-Concept, First Grade Achievement, and Behavior Indicating Success in Reading," doctoral dissertation, Indiana University, 1971. ED 071019.

Indications were found that subjects whose reading self-concept changed negatively experienced fewer successes in reading.

Rosenthal, Joseph. "Self-Esteem in Dyslexic Children," *Academic Therapy*, 9 (Fall 1973), 27-39.

Matched 20 dyslexic boys with 20 boys who had no apparent dysfunction and found a positive correlation between dyslexia and low self-concept. Dyslexic children from families with awareness and some comprehension of the disorder have more self-esteem than do those from families without such awareness.

Steig, Janet. "Teacher-Student Congruency and Its Relationship to Reading Achievement in Grades Four through Six," master's thesis, Rutgers University, 1972. ED 064698.

Good readers' self-ratings were more congruent with their teachers' ratings than were poor readers' self-ratings. Found that teachers had higher expectations for the good readers than the students had for themselves, and lower expectations for the poor readers than they perceived themselves.

Cognitive

These entries reflect the overriding interest in intellectual functioning, information processing, and integrative aspects of learning in children identified as reading/learning disabled.

Anderson, Robert P. "Measurement of Attentional Deficits," *Exceptional Children*, 39 (1973), 534-539.

Learning disabled youngsters were found to have more difficulty attending to monotonous tasks and responded at a higher rate to extraneous and task irrelevant stimuli than did control subjects. Data support the contention that children with learning disabilities are different from children without learning disabilities on the behavioral manifestations of an attention/distractibility construct.

Brown, Edward K. "Cognitive Mechanisms of Children Exhibiting Learning Disabilities," paper presented at the International Symposium on Learning Disabilities, Miami Beach, October 1974, 40 pp. ED 097406.

A homomorphic psychometric model has been proposed to show the integrative functions and relationships between and among psychometric measures of learning ability, aptitude, and/or achievement.

Cognitive and Affective Characteristics of Exceptional Children. Papers presented at the forty-eighth annual International Convention of the Council for Exceptional Children, Chicago, 1970, 60 pp. ED 039379.

The Language Acquisition Device (LAD) is related to reading and intellectual development in one of five papers. A task force report to discuss terminology related to minimal brain dysfunction is presented along with a discussion of intellectual processes involved in learning focusing on the developmental stages of Piaget.

Cummings, E.M., and T.T. Faw. "Short-Term Memory and Equivalence Judgments in Normal and Retarded Readers," *Child Development*, 47 (1976), 186-189.

Results indicated that poor readers performed less well on judgments requiring detection of differences in stimulus arrays which appeared to be mediated by deficiencies in short-term memory. While both poor and good readers performed equally well when the stimulus arrays were presented simultaneously, the poor readers' equivalence judgment responses deteriorated when a one-second delay was instituted.

Denny, Douglas R. "Relationship of Three Cognitive Style Dimensions to Elementary Reading Ability," *Journal of Educational Psychology*, 66 (1974), 702-709.

Compares 80 good and poor readers in grades two through five on three cognitive style dimensions. Results indicate that conceptual style preferences and

cognitive tempo generally fail to distinguish between good and poor readers. Substantial differences between good and poor readers were found along the attentional styles dimension.

Forer, Ruth E., et al. "Cognitive Correlates of Learning Problems: Some Implications for Early Identification and Intervention," paper presented at the biennial meeting of the Society for Research in Child Development, Denver, April 1975, 10 pp. ED 122927.

Reviews studies on cognitive processes that may mediate the development of early learning problems. Topics covered include auditory and visual discrimination deficits, integration of information from different modalities, significance of attentional factors, contributions of memory factors, and importance of cognitive style dimensions such as field dependence and reflectivity/impulsivity.

Friedland, Seymour, and **Samuel Meisels.** "An Application of the Piagetian Model to Perceptual Handicaps," *Journal of Learning Disabilities*, 8 (January 1975), 20-24.

Suggests that perceptually handicapped children who confuse letter pairs may be operating at the topological spatial preoperational developmental level, while current perceptual assessment tools and readiness programs require a Euclidean (concrete) level of operating. Recommends a developmental, stage-related plan to meet the needs of perceptually handicapped children who have not yet attained the Euclidean stage of development.

Guthrie, John, et al. "The Maze Technique to Assess, Monitor Reading Comprehension," *Reading Teacher*, 28 (November 1974), 161-168.

Examined the usefulness of the maze technique for identifying comprehension levels in normal and poor readers. A ratio of comprehension level to oral reading level was established for each child. Found that, when poor readers have difficulty with oral reading, comprehension is reduced drastically. [Earlier study appeared in *Journal of Educational Psychology*, 65 (December 1973), 294-299.]

Hackbarth, Steven, and **Sarah Rundle.** "Children's Word Recognition and Retrieval as a Function of Reading Ability," Southwest Regional Laboratory for Educational Research and Development, 1971. ED 108160.

Found no significant difference between fast and slow readers in either recognition or retrieval but high comprehenders had a significantly lower recognition threshold and retrieval time than low comprehenders.

Harris, G., and **D. Burke.** "Temporal Grouping and Presentation Rate in Serial Recall by Retarded and Nonretarded Children," *Bulletin of the Psychonomic Society*, 8 (1976), 91-93.

Found that imposing spatial organization on visually presented digit sequences facilitated recall for some retarded children but showed no benefit for nonretarded children. Conjectured the difference might be due to loss in storage or a limited storage capacity.

Mason, M., et al. "Immediate Spatial Order Memory and Item Memory in Sixth Grade Children as a Function of Reader Ability," *Journal of Educational Psychology*, 67 (1975), 610-616.

Found that good readers were better than poor readers in reconstructing spatial order of six letter consonant strings which were read to them while both groups performed perfectly on four letter strings. Findings suggest a capacity difference for spatial order memory and that poor readers may have a defect in either the encoding or retrieving of order information.

McLeskey, James. "Learning Set Acquisition by Reading Disabled and Normal Children," paper presented at the National Reading Conference, New Orleans, December 1977.

Investigates the similarities and differences between 8 reading disabled and 7 normal children in acquiring a conditional discrimination learning set. Stimulus materials consisted of 100 pairs of objects and 2 colored backgrounds. Normal children were found to be more adept at task and tended to try differing strategies more frequently, while reading disabled children tended to be more rigid in their approach.

Noelker, R.W., and **D.A. Schumsky.** "Memory for Sequence, Form, and Position as Related to the Identification of Reading Retardates," *Journal of Educational Psychology*, 64 (1973), 22-25.

Results indicate that three memory tasks were significant in discriminating reader ability. Memory for position was the best discriminator, sequencing task was second, and memory for form was third. Determined that sequencing was an independent indicator of variation in reading ability and not a combination of memory for position and form.

Noland, Eunice E., and **J. Schuldt.** "Sustained Attention and Reading Retardation," *Journal of Experimental Education*, 40 (1971), 73-76.

Retarded readers detected significantly fewer visual stimuli during a thirty minute task than did normal readers. These results suggest that children with reading problems manifest a deficit in the ability to sustain attention and accurately respond to small changes in visual stimulation.

Ring, Barbara. "Memory Processes and Children with Learning Problems," *Academic Therapy*, 11 (Fall 1975), 111-116.

Lists teaching strategies to train children to use memory organizing strategies. Suggests that teachers must accommodate learning disabled students by training in improved memory.

Rollins, Harold A., and **Lynne Genser.** "Role of Cognitive Style in a Cognitive Task: A Case Favoring the Impulsive Approach to Problem Solving," *Journal of Educational Psychology*, 69 (June 1977), 281-287.

Studied third and fourth grade white males from middle-class families. Data indicate that both accuracy and speed play a significant role in performance

on the cognitive task and accuracy and latency reversed by the number of dimensions in the cognitive task. Impulsive children were found to learn more quickly. Reflective children were more sensitive to the number of potential solutions and, when the number of possible solutions was large, they were subject to confusion.

Rosenfield, Sylvia. "Cognitive Style and the Reading Process," in Richard A. Earle (Ed.), *Classroom Practice in Reading*. Newark, Delaware: International Reading Association, 1977, 10-17.

Examines relationship between cognitive style and reading in terms of underlying information processing strategies in perceptual learning. Reviews several possible ways to facilitate the cognitive processing of the impulsive or global child which can be adapted to the classroom. Suggests adding a measure of cognitive style to screening test batteries and adjusting teaching methodology accordingly.

Samuels, S. Jay. "Attention and Visual Memory in Reading Acquisition," research report no. 26. Washington, D.C.: Bureau of Education for the Handicapped, 1971, 34 pp. ED 071238.

Concludes that attention and memory are active processes which involve the use of strategies and which undergo developmental changes. Teachers are urged to teach paired associate learning as a multistage process beginning with perceptual learning tasks in order to improve visual memory skills. Goals for beginning readers are said to be accuracy and automaticity in the following successive skills: distinctive feature learning, schemata (chunk) learning, and the making of stimulus-response connections.

Samuels, S.J., and **R.H. Anderson.** "Visual Recognition Memory, Paired-Associate Learning, and Reading Achievement," *Journal of Educational Psychology*, 65 (1973), 160-167.

Found that both good and poor readers were able to recognize transformations of shapes presented during the learning trial but that good readers were significantly better than poor readers in recognizing the original shapes. Suggests that differences in memory output may reflect differences in perceptual input which correspond with one's particular perceptual stage.

Siegel, Alexander, and **Judith Allik.** *A Developmental Study of Visual and Auditory Short Term Memory*. Pittsburgh: University of Pittsburgh, 1972. ED 076258.

A serial position recall task was presented to kindergarten, second grade, fifth grade, and college students under four different conditions: visual stimuli-visual recall cue, visual stimuli-auditory recall cue, auditory stimuli-visual recall cue, auditory stimuli-auditory recall cue. At all age levels, the recall of visual stimuli was markedly superior to that of auditory stimuli, regardless of modality of the recall cue. Suggested that rehearsal of visually presented forms by covertly labeling them and then rehearsing them within the verbal-auditory system seems to facilitate storage in long term memory.

Spring, Carl, and **Carolyn Capps.** "Encoding Speed, Rehearsal, and Probed Recall of Dyslexic Boys," *Journal of Educational Psychology*, 66 (1974), 780-786.

Study supports hypothesis linking slow motor speech encoders with a reduced ability to recall serial position of items. Found that poor readers performed more poorly than normal readers on all but the most recently presented items. Concluded that short-term memory is adequate for poor readers but long-term storage is impaired because of slow phonological coding.

Stein, Norman, and **Patricia Steele Prindaville.** "Discrimination Learning and Stimulus Generalization by Impulsive and Reflective Children," *Journal of Experimental Child Psychology*, 21 (1976), 25-39.

Reflective and impulsive third grade males were identified and given a learning task which required them to develop discrimination between similar stimuli. Reflective subjects acquired discrimination more rapidly and maintained a higher level of performance. They also exhibited, to a greater extent, expressive motor behavior in the presence of nonverbal cues. Impulsive children's slower rate of discrimination learning appeared to conform to learning characteristics of less developmentally mature children.

Wallbrown, Fred D., et al. "A Further Test of Myklebust's Cognitive Structure Hypotheses for Reading Disabled Children," *Psychology in the Schools*, 12 (April 1975), 175-181.

Investigates whether the mental abilities of severely reading disabled children are different from normals with respect to overall ability arrangement, ability integration, and ability organization.

Weber, Donald B. *Primacy and Recency Effects for Serially Presented Supra-span Information in Normal and Learning Disabled Children*, final report. Washington, D.C.: Bureau of Education for the Handicapped, 1975, 150 pp. ED 121013.

Concluded that overall performances of LD children in short-term memory were qualitatively similar to but quantitatively lower than normal children, while secondary memory for LD children was disproportionately more inefficient than primary memory. Training of rehearsal strategies did not produce a significant differential improvement in primacy performance, though chunking appeared to be a more effective strategy when used to organize visual stimuli and verbal stringing a more effective strategy for rehearsal of auditory stimuli.

White, Kathleen M. *Diagnosis and Remediation of Reading Retardation: A Focus on the Development of Logical Thinking*, final report. 1972, 76 pp. ED 063099.

Conducted an intensive diagnostic study of 4 reading-retarded children. An eleven-week logical training program was also administered. Findings indicate that some reading retardation is related to problems of a logical nature, and even when the source of reading difficulty is perceptual or emotional, children's

progress can be furthered by strengthening logical abilities in the word attack process.

Wiener, Morton, et al. "Identification, Organization, and Reading Comprehension for Good and Poor Readers," *Journal of Educational Psychology*, 62 (1971), 71-78.
Results of a study of good and poor readers in fifth grade suggest that a significant amount of comprehension difficulties of poor readers may be attributable to the manner in which the input is organized. Recommends the teaching of attending to organizational cues as an integral part of teaching all reading improvement.

Linguistic

The emerging interest in language acquisition and linguistic development is reflected in the entries appearing in this section.

Andolina, Charlene "Syntactic Maturity and Vocabulary Richness in the Oral Language of Learning Disabled Children at Four Age Levels, unpublished doctoral dissertation, University of Pittsburgh, April 1978 142 pp.
Explores the developmental trends in the spontaneous oral language of learning disabled children at four age levels from 7.5 to 13.5 years. Finds that a syntactic developmental pattern exists as measured by T-units and word length, and a vocabulary developmental pattern exists as measured by corrected type-token ratio and number of different words spoken. Comparison with normal children reveals that learning disabled children exhibit gradual control of syntax across the four age levels and vocabulary increases with advancing age.

Bartel, N.R., et al. "The Syntactic-Paradigmatic Shift in Learning Disabled and Normal Children," *Journal of Learning Disabilities*, 6 (1973), 59-64.
Noted during free word association tests younger children tend to give a sequential syntactically based response, whereas older children tend to make paradigmatic responses. Found no delay in making the syntactic-paradigmatic shift in learning disabled children. Concluded that learning disabled children develop linguistic categorization strategies at approximately the same ages as normal children and there may be other bases for their syntactic difficulties.

Cajon Valley Union School District. "Psycholinguistic Approach to Reading," El Cajon, California, 1974. ED 108 150.
Two hundred forty students performing at least 1.2 years below grade level were taught use of words in context and use of intuitive knowledge of grammar plus their conceptual knowledge in a study to increase reading comprehension. Expected growth was less than one and one-half years, but actual mean growth was three and one-fourth years with the most dramatic developments occurring during the first year.

Greenhill, Neil Jon. "The Relationship between Language, Categorization, and Primary Dyslexia." doctoral dissertation, University of Michigan, 1973, 125 pp. ED 084498.

Purposes of this study were to determine whether primary dyslexic children are impaired equally in the areas of language and cognition, and to assess the value of verbal cues in raising the dyslexic group's performance on word retrieval tasks. Results indicated that the dyslexic group was more handicapped in the retrieval of target words than in classifying information, and the variation in the number of clues presented seemed to have a greater relationship to the number of target words retrieved than the variation in the type of clues for both groups.

Jensen, Louise. "A Psycholinguistic Analysis of the Oral Reading Behavior of Selected Proficient, Average, and Weak Readers Reading the Same Material," doctoral dissertation, Michigan State University, 1972.

Using the Goodman Taxonomy of Reading Miscues, found that, when proficient readers miscued, substitutions showed less graphic similarity than weaker readers; that miscues of proficient readers resulted in a higher percent of syntactically acceptable sentences; and that the degree of retention of meaning was higher in the errors of proficient readers.

Miller, John, and **Richard Isakson.** "Effect of Syntactic and Semantic Violations on High and Low Reading Comprehenders," paper presented at the annual meeting of American Educational Research Association, San Francisco, April 1976.

Examines the relationship between comprehension and the perception of syntactic and semantic errors in forty-eight fourth graders. Concludes that comprehension is not a function of word recognition, good and poor readers differ in their use of semantic and syntactic clues, and poor readers need instruction emphasizing the use of language cues.

Newcomer, Phyllis L., and **Patricia Magee.** "The Performance of Learning (Reading) Disabled Children on a Test of Spoken Language," *Reading Teacher*, 30 (May 1977), 896-900.

Test of Language Development was administered to 38 special education students and comparison group of able readers. Results indicated that the learning disabled children performed less well on spoken language tasks than did the able readers. The learning disabled children were not, however, considered to be "linguistically impaired," having less difficulty with receptive than expressive language skills.

Parker, T.B., et al. "Comparison of Verbal Performance of Normal and Learning Disabled Children as a Function of Input Organization," *Journal of Learning Disabilities*, 8 (1975), 53-60.

Using organized and unorganized lists of words at varying degrees of difficulty, tested for immediate recall with 30 normal and 30 identified learning disabled elementary school children. Material organization and interaction between

organization and difficulty level was significant for the normal group only. Concludes that there is a short term memory deficiency which may create some of the linguistic problems for learning disabled children.

Semel, E., and **E. Wiig.** "Comprehension of Syntactic Structures and Critical Verbal Elements by Children with Learning Disabilities," *Journal of Learning Disabilities*, 8 (1975), 53-58.
Administered the Northwestern Syntax Screening Test and the Assessment of Children's Language Comprehension Test to a group of 34 seven- to eleven-year-olds who had been identified as learning disabled. Found that these children scored significantly lower on both tests than did the control group, with the older learning disabled students performing similarly to their younger counterparts.

Vogel, Susan A. "Syntactic Abilities in Normal and Dyslexic Children," *Journal of Learning Disabilities*, 7 (February 1974), 103-109.
Assessed the syntactic abilities in oral language of 20 normal and 20 dyslexic second graders. The dyslectics were found to be different from the normal children at a high level of significance on seven of the nine measures, all favoring the normals. Dyslexic subjects were significantly deficient in oral syntax. Findings indicate the importance of assessing oral syntax in the evaluation and diagnosis of children with reading difficulties.

Weiner, Paul S. "A Language-Delayed Child at Adolescence," *Journal of Speech and Hearing Disorders*, 39 (May 1974), 202-212.
Reexamined a sixteen-year-old boy, first seen at age four because of his severe language difficulties. Evidence was found of continuing deficits in speech and language, verbal intelligence, and reading.

Weinstein, R., and **M. Rabinovitch.** "Sentence Structure and Retention in Good and Poor Readers," *Journal of Educational Psychology*, 62 (February 1971), 25-30.
Determined that poor readers did not have as much ability to make use of information in the grammatical structure of a sentence. Suggested that problems in following verbal directions and symptoms of dropped endings in reading found in learning disabled children might be profitably discussed from a cognitive-linguistic basis.

Wiig, E., et al. "The Use of English Morphology by High-Risk and Learning Disabled Children," *Journal of Learning Disabilities*, 6 (1973), 59-67.
Found that learning disabled children had significantly greater difficulty than control subjects with progressive and past tenses and with third person singular of present tense. Learning disabled students exhibited less predictable patterns of rule acquisition than controls and were less likely to transfer phonological conditioning rules such as those involved in forming plurals and possessives across morphological categories.

Neurological

Sensorimotor integration in the central nervous system builds perceptions, recalls past experiences, generates ideas, and stimulates responses. The trend in studies regarding neurological functioning is toward hemispheric specificity relating to these processes in the learning disabled.

Annett, Marian, and **Ann Turner.** "Laterality and the Growth of Intellectual Abilities." *British Journal of Educational Psychology*, 44 (February 1974), 37-46.

Found no evidence that left- or mixed-handed children are typically poorer than right-handed children in levels of skill on verbal or nonverbal tests. But among children in the lower region of the ability distribution there was a statistical significance in the number of left- or mixed-handed children who had specific reading disabilities.

Bannatyne, Alex. "Mirror-Images and Reversals," *Academic Therapy*, 8 (Fall 1972), 87-92.

Notes obtaining positive significant correlations between mirror-imaging and a tendency to left-handedness or actual left-handedness. Speculates that visuospatial people from nine- to fifteen-years-of-age have a maturational lag because, like very young children, they tend to mirror-image letters and may be slow to learn reading and spelling.

Beaumont, J. "The Cerebral Laterality of Minimal Brain Damaged Children," *Cortex*, 12 (1976), 373-382.

Children diagnosed as minimally brain damaged did not appear to have established clear lateralization in their preferences nor in their skilled motor performances. Attributes the abnormalities in performance of these children to a deficit in interhemispheric integration.

Black, F. William "Neurological Dysfunction and Reading Disorders," *Journal of Learning Disabilities*, 5 (May 1973), 313-316.

Investigates intellectual functioning, visual perception, and academic achievement in 25 eight-year-old right-handed reading disabled children with neurological abnormalities and 25 matched reading-impaired controls with no neurological dysfunction. When the neurologically impaired sample was differentiated as to right- or left-side impairment, the right-sided sample performed significantly less adequately on the variables of WISC performance scale and Frostig test. The left-sided sample performed significantly less adequately on the WISC verbal scale and WRAT reading and spelling scales.

Bogen, Joseph E. "Some Educational Aspects of Hemispheric Specialization," *UCLA Educator*, 17 (1975), 24-32.

Suggests that hemispheric specialization tends to be process specific rather than material (product) specific. Method of presentation, such as laboratory

and field experience, may facilitate greater right-hemisphere participation than do lectures and seminars. Since any pursuit is probably bihemispheric in some degree, a mutually beneficial reinforcement seems a reasonable expectation in facilitating interaction between the two hemispheres.

Consilia, Sister Mary. "Neurological Organization and Reading," paper presented at the annual convention of the International Reading Association, Anaheim, 1970, 17 pp. ED 044239.
Describes the structure and function of the nervous system as it puts us into contact with our environment. Contains implications for the diagnosis of neurologically handicapped learners in terms of pinpointing the area of dysfunction.

Guyer, B. La Rue, and **Morton P. Friedman.** "Hemispheric Processing and Cognitive Styles in Learning-Disabled and Normal Children," *Child Development*, 46 (1975), 658-668.
Selected a series of tests for their association with specialized brain hemisphere processing to be used with learning-disabled and normal children. The normal group showed a two-grade mean advantage over the learning-disabled on the achievement tests. Cognitive variables of field articulation, verbal recognition, and verbal closure correctly classified 82 percent of the subjects as poor or good readers.

Keller, James, et al. "Relationships among Handedness, IQ, Sex, and Reading Achievement of School Age Children," *Perceptual and Motor Skills*, 37 (1973), 159-162.
Sampled 277 boys and girls, grades three to twelve, to determine the interactions among handedness, sex, IQ, and reading achievement. Found significant interaction between IQ and reading achievement, with correlations between IQ and reading achievement among left-handers significantly lower than among right-handers.

Kershner, John R. "Reading and Laterality Revisited," *Journal of Special Education*, 9 (Fall 1975), 269-279.
Reviews research on laterality and its relationship to reading in normal and learning disabled children. Suggests that mixed or crossed laterality may indicate that the minor hemisphere may be competing with the major for control, resulting in language difficulties.

McGlanan, Francis. "Dyslexia-Neural Organization: Abnormal Right Hemisphere Specialization in Developmental Dyslexia," *Journal of Learning Disabilities*, 10 (April 1977), 219-223.
Clinical cases of dyslexic children were studied over a five year period. Found that the left hemisphere is the major hemisphere for linguistic processing in dyslexics; however, such ability is considerably lower than in normal children. Spatial processing appears to involve more left hemisphere functioning in dyslexics indicating a different neural organization and a preferred cognitive

strategy favoring the right hemisphere and spatial-holistic processing in the dyslexic.

Nelson, Louis R. "Neurological Aspects of Reading Disability," paper presented at the annual meeting of the American Educational Research Association, Chicago, April 1974, 84 pp. ED 116408.

Suggests that many reading disabilities are the result of normal constitutional differences and that the term "minimal brain dysfunction" is rarely appropriate and does not help the remediation process. Notes theories which relate neurology and reading ability.

Pellettieri, A.J. "The Neurophysiology of Learning and Pedagogy," paper presented at the National Reading Conference, St. Petersburg, Florida, December 1970. ED 056839.

Concludes that breaks in learning often stem from physiological processes and that the psychoeducator should make use of the established facts of the past seven years from anatomy and physiology to update pedagogy.

Witleson, Sandra F. "Developmental Dyslexia: Two Right Hemispheres and None Left," *Science*, 195 (1977), 309-311.

Administered a battery of four tests considered to reflect hemispheric specialization to 85 right-handed dyslexic boys six-to-fourteen years-of-age. Results indicated that in dyslexics, spatial functions are represented in both hemispheres, thus interfering with left hemisphere processes resulting in deficient linguistic, sequential cognitive processing.

Zaidel, Eran. "Reading in the Minor Hemisphere," *Biology Annual Reports*, California Institute of Technology, 1975.

Describes patients who had disconnected hemispheres who read better with their right hemispheres than patients with only a right hemisphere. Suggests that the right hemisphere cannot acquire reading by itself unless it is allowed free interhemispheric communication during or after the skill acquisition stage.

Perceptual

Perceptual processes generally refer to brain operations which involve interpreting and organizing the physical elements of sensory input.

Auditory

This section contains entries relating to auditory processing, auditory memory, and auditory discrimination. These terms tend to be used interchangeably with auditory perception. Primary level children are the focus of attention in the majority of the studies.

Ashmore, Robert James. "The Employment of an Auditory Perceptual Technique to Increase Ability to Predict Reading Success in Young Children," doctoral dissertation, University of Maryland, 1973. ED 094366.

Using the Revised Auditory Test, Bender Gestalt Test, and the Metropolitan Readiness Test as predictive measures and Gray Oral Reading paragraphs and WRAT as measures of reading ability, author concludes that auditory perception is a predictor of future reading ability with first grade children and not with younger children.

Badian, Nathlie. "Auditory-Visual Integration, Auditory Memory, and Reading in Retarded and Adequate Readers," *Journal of Learning Disabilities*, 10 (1977), 49-54.

Studied 60 children in grades three through five and found a relationship between auditory memory and performance on auditory-visual integration. Poor readers were inferior on both verbal and nonverbal matching tasks which made demands on short-term auditory memory. Inferior readers' integration performance deteriorated as memory demands increased. Suggested that inferior performance of poor readers may be due to an impairment in memory for temporal sequential stimuli.

Burrows, David. "Modality Effects in Retrieval of Information from Short-Term Memory," *Perception and Psychophysics*, 11 (1972), 365-372.

Supports the logogen theory of short-term memory storage whereby information is contained in modality-specific stores for only a short time and then fed into logogen which categorize for features. States that auditorily presented information exists in an auditory format for a short time or in a post categorical format which does not preserve sensory features but, presumably, extracts some sort of semantic features.

Fleming, James W. *Auditory Highlighting as a Strategy for Improving Listening Comprehension.* Washington, D.C.: Bureau of Education for the Handicapped, July 1974, 21 pp. ED 102750.

Fifty-eight students reading two or more years below expected level and who learned best through the auditory modality took part in this study. Results indicated that neither highlighting technique significantly increased listening comprehension, that treatment difference scores were related to visual memory scores, and that one-half to one-third of subjects were able to predict the cue condition in which they would perform the best.

Groff, Patrick. "Reading Ability and Auditory Discrimination: Are They Related?" *Reading Teacher*, 28 (May 1975), 742-747.

Points to the lack of agreement among experimental data regarding the relationship of auditory discrimination and reading. Suggests need for further investigation into this supposed relationship as well as cautious outlook to the importance of auditory discrimination on reading ability.

Hammill, D.D., and **S.C. Larsen.** "The Relationship of Selected Auditory Perceptual Skills to Reading Ability," *Journal of Learning Disabilities*, 7 (1974), 429-435.

Reviewed over 280 different correlation coefficients depicting relationship between tests of auditory perception and reading. Found no practical relationship between sound-blending, discrimination, memory, or auditory-visual integration and either word recognition or reading comprehension. The median correlation was no higher for beginning readers than for high school aged readers.

Larsen, Stephen C., et al. "The Use of Selected Perceptual Tests in Differentiating between Normal and Learning Disabled Children," *Journal of Learning Disabilities*, 9 (February 1976), 32-37.

Studied 59 fourth grade students considered learning disabled and 30 fourth graders who were not. Tests were administered to determine the need for perceptual training. The Bender-Gestalt was the only test which significantly differentiated between the normal and the learning disabled groups. Concluded that either auditory discrimination tests are invalid or that auditory discrimination is not a factor in learning disabilities.

Lasky, Elaine Z. "An Approach to Auditory Processing," *Acta Symbolica*, 14 (Spring 1973), 53-62.

Discusses the hierarchical aspect of auditory processing. Model proceeds from detection, discrimination, and recognition to identification. Detection involves detection of pure tones and speech reception; discrimination involves making same and different judgments; recognition involves selecting a word that rhymes with alternate choices; and identification involves identifying a word with minimal amount of cues.

Powers, Thomas E., and **Saied H. Jacob.** "Comprehension of Directional Concepts as a Function of IQ and Sensory Modality of Task Presentation," *Journal of Special Education*, 10 (1976), 199-202.

Ninety-six sixth grade children of both sexes of normal IQ were tested, half receiving visual task presentation and the other half auditory. Regardless of IQ level, the auditory modality of task presentation resulted in better performance than the visual modality. Subjects tended to do better when they were read to, as opposed to when they read for themselves. Subjects with higher IQ scores tended to do better on tasks than those with lower IQ scores.

Risko, Victoria. "Relate Auditory Discrimination to Reading Achievement," *Reading World*, October 1973, 43-51.

Devised an instrument to determine if children can distinguish beginning, middle, and ending sounds of words and relate them to sounds in other words. Recommends this technique for both testing and teaching auditory discrimination of specific speech sounds.

Ritchie, Dolores J., and **James L. Aten.** "Auditory Retention of Nonverbal and Verbal Sequential Stimuli in Children with Reading Disabilities," *Journal of Learning Disabilities*, 9 (1976), 54-60.

Explores the ability of children to retain serially presented auditory stimuli using 20 reading disabled and 20 reading achieving students. The two groups differed significantly on three verbal measures: phonemes, sentences, and syntax. The ability to retain sequences of phonemically similar words which varied by initial or final consonants proved to be the most discriminating measure between the two groups, suggesting that reading proficiency depends as much on auditory as visual processing.

Rosenthal, William S. "Auditory and Linguistic Interaction in Developmental Aphasia: Evidence from Two Studies of Auditory Processing," Stanford University, June 1972. ED 010558.

Notes a difference between adult and childhood acquired aphasia and congenital childhood (developmental) aphasia. The adult or child acquired aphasic loses some of the existing linguistic competencies and performance skills, whereas the congenital or developmental aphasic never develops or only partially develops adequate linguistic skills even though other developmental milestones are generally normal and peripheral sensory systems are intact.

Rosner, Jerome. "Auditory Analysis Training with Prereaders," *Reading Teacher*, 27 (1974), 379-384.

Reports the outcome of a study designed to assess the effects of the auditory component of the Perceptual Skills Curriculum to four-year-old innercity children. Outcomes indicate significant training effects and supports the feasibility of teaching auditory analysis skills to preschool children.

Rosner, Jerome. "Language Arts and Arithmetic Achievement and Specifically Related Perceptual Skills," *American Educational Research Journal*, 16 (1973), 59-68.

Explores the correlates between auditory and visual perceptual skills and primary grade reading and arithmetic achievement. Results suggest that learning to read depends heavily on auditory skills, and that arithmetic achievement depends heavily on visual-motor skills. Pedagogical implications of the data are discussed in terms of choosing optimally effective instructional programs for primary grade children based on strengths and deficits of their perceptual skills.

Rosner, Jerome, and **Dorothea P. Simon.** "The Auditory Analysis Test," *Journal of Learning Disabilities*, 4 (1971), 384-392.

Describes a test of auditory perception based on phonic analysis tasks. Reports significant correlations (from .53 to .84) with grades one to six reading scores. Discusses implications as they relate to teachers, curriculum designers, and others concerned with individual differences in the perceptual aptitudes of children.

Schevill, Helen Shaner. "Longitudinal Kindergarten-First Grade Perceptual Study: Temporal Ordering and First Grade Reading," paper presented at the annual meeting of the American Educational Research Association, New Orleans, 1973, 27 pp. ED 078907.

Investigates perceptual functioning in the kindergarten-first grade period for slow- and average-maturing children. Consistent patterns of behavior were found for each group of children when reading readiness scores, grade levels, and sensory modalities were the crucial variables; deficiencies in auditory, but not visual, perceptual encoding were found in slow learners' first grade performance.

Witkin, Belle Ruth. *Reading Improvement through Auditory Perceptual Training: End of Budget Period Report.* Sacramento: California State Department of Education, June 1972, 158 pp. ED 079694.

Eighty-five boys and 67 girls in the second grade and 25 boys and 14 girls in learning disability group clinics in grades two to six participated in the use of a tape-recorded, sequenced program of auditory perceptual training. Results indicated that criterion levels were reached on three of the four interim review tests and students made significant pre/post test gains on most of the variables.

Visual

Entries here relate to visual perception, visual motor, and visual discrimination studies. The terms tend to be used interchangeably and, as with auditory perception, the locus of attention is younger children. Studies dealing with ocular movements are also included because of their relationship to information processing. Studies dealing with vision and visual training, which fall into a different conceptual framework, are not included.

Abrams, S.G., and B.L. Zuber. "Some Temporal Characteristics of Information Processing During Reading," *Reading Research Quarterly*, 8 (Fall 1972), 40-51.

Studied saccadic eye movements and return sweep as eyes move across a printed line in staircase fashion. Normal text and spaced text of various lengths of spaces between words were used to demonstrate that information processing during some fixation pauses was positional as opposed to textual.

American Academy of Pediatricians and the American Academy of Ophthalmology (assisted by the president and past president of the Division for Children with Learning Disabilities, CED). "The Eye and Learning Disabilities," a joint organizational statement, *Pediatric News*, 41 (February 1972).

The Joint Committee reached the following conclusions:

1. Visual training programs are not effective and eye care should never be instituted in isolation when a patient has a learning problem; instead, a multidisciplinary approach should be used.

2. There are no peripheral eye defects which produce dyslexia and associated learning disabilities.
3. No known scientific evidence supports claims for improving the academic abilities of learning disabled or dyslexic children with treatment based solely on a) visual training or b) neurologic organizational training (laterality training, balance board, perceptual training).
4. Glasses have no value in the treatment of dyslexia or other learning problems.
5. The teaching of learning disabled and dyslexic children is a problem of educational science. No one approach is applicable to all children. A change in any variable may result in increased motivation of the child and reduce frustration. Parents should be made aware that mental level and psychological implications are contributing factors to a child's success or failure.

Binkley, M. Edward, and **William Maggart.** "Reading Retardation and Bender Gestalt Performance," *Psychology in the Schools*, 11 (October 1974), 400-402.

Compares two groups of children known to be poor readers, those with adequate perceptual functioning and those without, to determine what inadequate perceptual functioning is related to the severity of reading and adjustment problems. Inadequate Bender performance was related to a more severe reading problem.

Black, F. William. "Achievement Test Performance of High and Low Perceiving Learning Disabled Children," *Journal of Learning Disabilities*, 7 (March 1974), 178-182.

Compared 30 pairs of matched low- and high-perceiving learning disabled children. With the effects of intelligence controlled, the reading test performance on the Wide Range Achievement Test of the low perceivers was significantly higher than that of the high perceivers. No significant differences in spelling or arithmetic existed between the two samples. Only 2 of a possible 18 correlations between perceptual and achievement variables were significant.

Buckland, Pearl A., and **Michael J. Ash.** "A Comparison of Visual Discrimination Skills of Regular Class Pupils Categorized by Levels of Word Recognition Ability with Pupils Placed in a Special Class," paper presented at the twentieth annual convention of the International Reading Association, New York, May 1975, 7 pp. ED 102531.

Investigates the visual discrimination abilities of primary age regular class children with varying levels of word recognition skill and of special class children. Results indicate that regular class pupils of differing levels of word recognition skill did not differ significantly by level in discrimination ability and that no significant relation existed between any of the visual discrimination skills and word recognition abilities for the special class children.

Coy, Michael N. "The Bender Visual Motor Gestalt Test as a Predictor of Academic Achievement," *Journal of Learning Disabilities*, 7 (May 1974), 317-319.

Investigates the predictive validity of the Bender Visual Motor Gestalt Test for children as it relates to achievement in reading and math. The Wide Range Achievement Test reading and arithmetic scores of 51 third graders were separated into top and bottom 27 percent and were compared with Bender Gestalt Test scores. No significant differences were found for total Bender Gestalt Test performance. Integration errors were significantly more prevalent in the low reading achievement groups. The validity of using the Bender Gestalt Test as a predictor of reading and math achievement for regular third graders was further questioned.

Fisher, Richard, and **William Bruss.** "The Viewing of TV, Perceptual Passivity, and Reading," *Colorado Journal of Educational Research*, 15 (Spring 1976), 33-37.

Finds that the number of hours of TV viewing is significantly related to perceptual passivity. Also notes significant positive correlation between perceptual passivity and reading achievement. Cites research findings of negative correlation between long hours of TV watching and scholastic achievement with poorest students in school being the most frequent watchers of TV.

Griffin, Donald C., et al. "Saccades as Related to Reading Disorders," *Journal of Learning Disabilities*, 7 (May 1974), 310-316.

Discusses saccades as a possible contributing cause of reading problems rather than the traditional view that they are primarily or solely the result of reading experience. An experiment is reported in which nonreading as well as reading materials and tasks were used to study saccadic eye movements of two groups of 13 male nine-to-eleven-year-olds who read adequately or inadequately. On all nonreading and reading materials the inadequate readers tended to make more regressions and fewer forward fixations.

Hammill, Donald, Libby Goodman, and **J. Lee Wiederholt.** "Visual-Motor Processes: Can We Train Them?" *Reading Teacher*, 27 (February 1974), 469-478.

Reviewed 42 intervention studies based on Kephart and Getman training methods. Eleven were chosen to be assessed as to their effects on visual-motor performance: the experimental groups performed better than the control groups on only four of twenty-five visual-motor skills. Fourteen independent studies were made on the effects of supplementing regular reading programs with Frostig-Horne visual perceptual training program. Thirteen of the fourteen studies indicated no improvement in reading ability.

Hare, Betty. "Perceptual Deficits Are Not a Cue to Reading Problems in Second Grade," *Reading Teacher*, 30 (March 1977), 624-627.

Studied 81 second graders who scored low on the Frostig Developmental Test of Visual Perception but who succeeded in learning to read. Hypothesized that

these students compensated with their auditory modality. A battery of tests measuring auditory abilities was administered individually. Findings did not support the hypothesis. Stated that perceptual disabilities cannot be used as indicators to predict reading problems.

Kershner, John. "Visual-Spatial Organization and Reading: Support for a Cognitive-Developmental Interpretation," *Journal of Learning Disabilities*, 8 (January 1975), 37-43.
Compared the effects of visual perceptual and cognitive spatial organization on second graders' abilities to read. Found that children with high cognitive spatial ability but low visual perceptual ability exhibited greater reading success than did children with high visual perceptual ability and low cognitive spatial ability.

Klein, Gary A., and **Frank Kurkowski.** "Effect of Task Demands on Relationship between Eye Movements and Sentence Complexity," *Perceptual and Motor Skills*, 39, Part 2 (August 1974), 463-466.
Studied the relationship between eye movements and sentence complexity. Found that greater amount of eye movement was necessary for self-embedded sentences. Suggested that as subjects made more eye fixations to probe for meaning there was greater strain on short term memory.

Lahey, Benjamin B., and **Lester A. Lefton.** "Discrimination of Letter Combinations in Good and Poor Readers," *Journal of Special Education*, 10 (1976), 205-210.
This study of second, third, and fourth graders indicates that students make more errors on match-to-sample tasks of many letters than those of one or few letters. Poor readers make more errors on longer words and given problems than do good readers.

Rosner, Jerome. "Visual Analysis Training with Preschool Children," *Journal of the American Optometric Society*, 45 (1974), 584-591.
Reports the outcomes of a study designed to test the effects of implementing a standardized visual-motor testing and training program with a group of four-year-old children attending an innercity preschool. The posttraining visual-motor skills of the experimental group compare favorably with both innercity and suburban nontrained children of the same ages, being significantly better than the former group and equal to the latter.

Ross, Alan O. *The Relationship of Saccadic Eye Movements to Reading Disabilities: A Final Report.* Washington, D.C.: National Institute of Education, 1973, 26 pp. ED 111 016.
Compares saccadic (small, rapid, and apparently involuntary) eye movements of 14 children (ages seven to twelve) with reading difficulties and eye movements of 14 normal readers before and after the problem readers underwent a seven-month individual tutoring program. At pretesting, the problem readers showed a rate of eye movements that was markedly lower than that of the normal readers

whose rate they attained or surpassed at completion of the remedial reading program. Results suggest that saccadic eye movements are susceptible to training for improved reading, attention, and information gathering.

Rubino, C.A., and H.A. Minden. "An Analysis of Eye Movements in Children with a Reading Disability," *Cortex*, 9 (June 1973), 217-220.
Studied the relationship between eye movements and reading ability using subjects from a summer residential camp for children with learning disabilities and a control group from a summer residential recreational camp. Despite the findings of a relationship between certain characteristics of eye movements and reading ability, the question of cause and effect was not answered. If cause, then remediation of eye movement deficits through specific training should produce concomitant improvement in reading ability. If the remediation of these deficits shows no improvement in reading ability, then it must be assumed that eye movements are only remotely related to reading ability.

Seaton, Hal W. "The Effects of a Visual Perception Training Program on Reading Achievement," *Journal of Reading Behavior*, 9 (1977), 188-192.
Compares first graders receiving visual training with two control groups receiving traditional first grade instruction. Results showed no significant differences on the Metropolitan Achievement Tests. Suggests that visual perception training for all children must be seriously questioned.

Singer, H., et al. "The Effect of Pictures and Contextual Conditions on Learning Responses to Printed Words," *Reading Research Quarterly*, 9 (1974), 555-567.
Studied the effects of pictures and context as cues of 80 first grade and 84 second grade children from a metropolitan school system. Found that the reader could learn to identify the word faster without the picture. Poor readers were significantly more distracted by pictures than were good readers. Supported Samuels' focal attention theory that picture and context clues deter word perception because visual attention is not focused on graphic features.

Stennett, R.G., et al. "The Relationship of Eye Movement Measures to Psychomotor Skills and Other Elemental Skills Involved in Learning to Read," *Journal of Reading Behavior*, 5 (1972-73), 1-12.
Concludes that simple ocular-motor skill involved in reading is probably sufficiently overlearned by the time children are taught to read and that variations in that skill do not account for much of the variance in children's mastery of reading.

Swenson, Ingrid. "Word Recognition Cues Used in Matching Verbal Stimuli within and between Auditory and Visual Modalities," *Journal of Educational Psychology*, 47 (1974), 409-415.
Findings indicate that better beginning readers look at the entire word, scanning from left to right, and use initial consonant and vowel (CV) as well as final

vowel and consonant (VC)—the larger cues that have more information. Suggests that instructional procedures which facilitate the integration of speech units with their graphic counterparts be used with children who experience difficulty with integration tasks.

Weaver, Phyllis A., and **Jerome Rosner.** *Relationships between Visual and Auditory Perceptual Skills and Comprehension Independent of Decoding.* Washington, D.C.: National Institute of Education, 1975, 17 pp. ED 113679.

Resulting correlation coefficients showed a highly significant relationship between visual perceptual skills and listening comprehension, and visual perceptual skills and reading comprehension when the effect of decoding skills was controlled. Auditory perceptual skills were more closely related to reading comprehension than to listening comprehension. Suggested that, although decoding skills explain much of the variance in reading comprehension, visual perceptual skills also contribute to the explanation of this variance.

Haptic

The relatively small number of recent studies in haptic perception compared to the larger number of auditory and visual perception is indicative of the smaller degree of current research interest in haptic modes in contrast to the greater degree of interest in other modes to process information.

Clark, Francis E. "Effects of Two Learning Treatments on the Understanding of or the Graphic Projection by Students Varying in Visual-Haptic Attitude," doctoral dissertation, University of Missouri, 1971, 281 pp. ED 057187.

Studied 60 sixth grade students in cognition through prerequisite principles and cognition through visualization and the relationship to visual-haptic aptitude. Students who received the prerequisite principles scored significantly higher on cognition.

Gurucharri, Kathleen Agnes. "Haptic Performance and First Grade Reading Achievement," doctoral dissertation, University of Miami, 1973, 203 pp. ED 097658.

Investigates possible relationships between haptic abilities and first grade reading achievement. Findings indicate that haptic abilities were significantly related to reading achievement. Subjects who differed in cognitive ability or reading readiness also differed significantly in haptic performance. Subjects from higher socioeconomic status levels possessed more highly developed haptic abilities than those from lower levels. There were no significant differences in performances of boys and girls.

Harper, Ruth Valerie. "An Examination of Piaget's Stages of Haptic Perception in Young Children," master's thesis, University of Illinois, 1973, 32 pp. ED 097109.

Examines developmental stages of haptic perception of 144 preschool and kindergarten children of various socioeconomic levels randomly assigned to two memory conditions and to one of the three object groups set up by Piaget. Data were analyzed to determine the effects of age, object type, difficulty level, sex, and memory on the development of haptic perception. Results provide partial support of Piaget's theory of haptic perception.

Millar, Susanna. "Visual and Haptic Cue Utilization by Preschool Children: The Recognition of Visual and Haptic Stimuli Presented Separately and Together," *Journal of Experimental Child Psychology*, 12 (1971), 88-94.

Thirty-six three- and four-year-old children were tested on delayed visual and haptic recognition of nonsense shapes. The visual modality was superior to the haptic. Visual recognition was not improved when haptic cues were added, but haptic recognition by four-year-olds was improved when visual cues were added.

Raskin, Larry M., and **Georgia Pitcher Baker.** "Tactual and Visual Integration in the Learning Process: Research and Implications," *Journal of Learning Disabilities*, 8 (February 1975), 108-112.

Summarizes research studies concerned with integration of touch and vision. Concludes that vision is the dominant and superior modality for all populations, age groups, and sexes in selecting a learning strategy. Teachers may begin with visual presentation and add touch and other modalities until the appropriate approach is found.

Reisboard, Richard Jay. "A Study of Certain Aspects of Haptic and Related Perceptual Functioning of Good and Poor Readers at Second and Fifth Grades," doctoral dissertation, University of Miami, 1972, 176 pp.

Investigates the validity and reliability of the Modality Assessment Profile (MAP) designed by Carner in determining haptic, intermodal, and motor abilities of good and poor readers at the second and fifth grades. Significant differences were found in performance among second graders studied in the areas of haptic-visual matching, haptic-spatial ability, haptic discrimination, and haptic-visual-auditory association.

Segel, Ruth. "Improving Perception through the Haptic Process," *Academic Therapy*, 9 (Summer 1974), 419-431.

Demonstrates that perception can be increased in learning disabled children through tactile and kinesthetic modalities. Order and pattern were introduced through play activity with manipulative materials followed by sounds and letters in combinations. Suggested list of manipulative materials included.

Segel, Ruth. "The Haptic Approach in Practice," *Academic Therapy*, 12 (Winter 1976-77), 219-224.
Cites case studies of children with reading/learning problems. Suggests that perception can be increased through tactile and kinesthetic modalities and that haptic input can be used to compensate, reinforce, and enrich visual and auditory reception and increase organization ability, memory span, and attention span.

Siegel, Alexander W., and **John C. Barber.** *Visual and Haptic Dimensional Dominance: The Effects of Novelty*. University of Pittsburgh, Learning Research and Development Center, 1972, 21 pp. ED 071763.
Tests of dimensional dominance were given to 108 children from preschool, kindergarten, and first grade levels. The effects of novelty manipulation were opposite in the two modalities. Visually, introduction of novel color cues with familiar forms produced the greatest shift toward color dominance; haptically, the greatest shift was toward texture dominance.

Williams, J. "Training Children to Copy and to Discriminate Letterlike Forms," *Journal of Educational Psychology*, 67 (1975), 790-795.
Attempts to determine the effectiveness of tactile-kinesthetic training (copying) and of visual discrimination training on ability to reproduce letterlike forms and visual discrimination. Specificity of reproduction training appears to be stronger than that of discrimination training. Suggests that the perceptual learning involved in differentiating between letters and the acquisition of ability to copy letters be considered as separate tasks.

Witelson, Sandra. "Hemispheric Specialization—Tactual Processing," *Cortex*, 10 (March 1974), 3-17.
Investigates perception of simultaneously presented pairs of different tactile nonsense shapes in determining hemispheric specialization. Suggests that the superior perception of the left hand stimuli reflects right hemisphere specialization for the perception of nonlinguistic spatial stimuli. Interprets findings as indicating that linguistic stimuli presented tactually must be analyzed first in a spatial code and then translated into a linguistic code, and that there is no direct link between input and linguistic analysis in the tactual modality as there appears to be in the visual and auditory modalities.

Wolff, Peter. "The Role of Stimulus Correlated Activity in Children's Recognition of Nonsense Forms," *Journal of Experimental Child Psychology*, 14 (1972), 427-441.
Two experiments examine the effect of haptic exploration on visual recognition of nonsense forms by four- to seven-year-old children. Visual recognition is enhanced by haptic exploration.

Motor

The tenuous relationship between reading/learning and perceptual motor development continues to be studied.

Dietrich, Coralie. "An Experimental Analysis of Perceptual Motor Approaches to Learning Problems," *Education*, 93 (Fall 1974), 381-392.

Studies the relative effectiveness of perceptual-motor training on reading achievement, perceptual-motor development, and behavior adjustment of children (ages seven to twelve) with reading problems, in a nongraded school. In six months, the perceptual-motor training had no significant effect on reading achievement or perceptual-motor development. The training group had significantly poorer performance on the school behavior variables. Training in the perceptual skills did not seem to transfer to reading letters and words.

Grise, Philip J., Jr. "The Results of Sensory Motor or Perceptual Motor Programs on Beginning Reading Skills," Florida State University, June, 1973. ED 088032.

Reviews literature currently available on perceptual-motor and sensory-motor programs which affect reading readiness in beginning readers. Concluded that those who support perceptual-motor programs in early childhood education for the purpose of facilitating reading have not provided substantive evidence to validate their claims.

Klesius, Stephen E. "Perceptual-Motor Development and Reading: A Closer Look," in Robert C. Aukerman (Ed.), *Some Persistent Questions on Beginning Reading*. Newark, Delaware: International Reading Association, 1972. ED 050916.

Reviews eleven studies which either support or refute the hypothesis that programs of perceptual-motor development enhance reading readiness or achievement. Concludes that, while the hypothesis could be neither confirmed nor denied, the importance of research may be in specifying the conditions under which perceptual-motor programs are appropriate—that is, for disadvantaged children as a preventive program and for some children with learning disabilities as a remedial program.

Kohen-Raz, Reuven. *Impairment and Training of Static Balance Ability in Educationally Handicapped Children*, final report. Washington, D.C.: U.S. Office of Education, 1970, 129 pp. ED 047483.

Significant correlations were found in only 40 percent of 247 educationally handicapped children, ages six to ten, indicating that learning difficulties of EH children may be categorized into balance related and balance unrelated. Trainability in balance was significantly correlated with performance IQ and reading level prior to the training. Length of stay in EH class correlated positively with reading in those experimentals whose reading improved after balance training.

Pryzwansky, Walter. "Effects of Perceptual-Motor Training and Manuscript Writing on Reading Readiness Skills in Kindergarten," *Journal of Educational Psychology*, 63 (1972), 110-115.

Studied kindergarteners in six schools in a metropolitan city in Pennsylvania. Half received three perceptual-motor programs in their curriculum while the others served as controls. Found no significant effect of the perceptual-motor programs on readiness skills as measured by Gates-MacGinitie Reading Test.

Slater, Barbara R. "Achievement in Grade Three by Children Who Participated in Perceptual Training During Kindergarten," *Perceptual and Motor Skills*, 36 (June 1973), 763-766.

Conducted a follow-up study, at the third grade level, of 19 randomly selected controls and 36 subjects who participated in a perceptual training course. Compared reading, arithmetic, and composite achievement scores on the Iowa Tests of Basic Skills. Participant subjects performed at a higher level in all three areas than did the nonparticipants.

Spring, Carl. *Perceptual-Speed Deficit in Reading-Disability Children.* Washington, D.C.: National Center for Educational Research and Development, August 1972, 25 pp. ED 066853.

Reading disability children were tested on perceptual encoding speed with a visual reaction time task requiring same/different judgments. Performance of disabled children deteriorated as testing progressed, and recovered after a rest. In a second study, poor readers in the first study were rated by their teachers on a fifteen-item inventory of abnormal motor behavior. Reaction time from initial trials of the test given in study one was significantly correlated with the motor coordination factor on the inventory. A third study tested hyperactive boys taking methylphenidate medication and hyperactive boys whose medication was temporarily discontinued. Reaction time on early trials was not significantly different for boys in the on-medication and off-medication groups; as testing progressed, reaction times of normal boys and boys taking medication remained fairly stable, while the performance declined in hyperactive boys not taking medication.

Spring, Carl, and **John B. Hopkins.** "Reaction Time in Learning-Disability and Normal Children," paper presented at the annual meeting of the American Educational Research Association, Chicago, April 1972, 3 pp. ED 059857.

Investigates children who may have normal or above normal intelligence, yet fail to read at levels appropriate to their ages. Results support a theory that certain learning disability children respond to laboratory tasks with suboptimal levels of arousal.

Sullivan, Joanna. "The Effects of Kephart's Perceptual Motor Training on a Reading Clinic Sample," *Journal of Learning Disabilities*, 5 (November 1972), 32-38.

Used Kephart, Getman, and Frostig methods with poor readers of average and above IQ who had binocular fusion difficulties. Results showed that perceptual motor training had no effect upon reading comprehension, yet effects upon oral reading were close to significant. Suggested that improved control of eye movement and visual attention span would likely effect improved oral reading but not comprehension.

Modality Preference

In an attempt to isolate modalities of most value to reading/learning disabled children, modality preference studies continue to be conducted.

Bursuk, L.Z. "Sensory Mode of Presentation as a Factor in the Reading Comprehension Improvement of Adolescent Retarded Readers," paper presented at the annual convention of the American Educational Research Association, 1971.

Tenth grade students reading one or more years below grade level were classified as auditory learners, visual learners, or learners with no sensory preference. Reading comprehension was the dependent variable. A significant interaction was found between mode of lesson presentation and the modality preference of learners. Visual learners scored significantly higher when a visual approach was used. The other two groups made significantly greater improvement in reading comprehension when a combined aural-visual approach was used.

Dauzat, Joann. "The Effect of Four Methods of Teaching Word Recognition Skills to Children from Disadvantaged and Nondisadvantaged Families," doctoral dissertation, Northeast Louisiana State University, 1970. ED 055745.

Involved 20 students from families with incomes of $3,000 or less and 20 nondisadvantaged students randomly selected from second grade at a Louisiana public school. Each student was administered the Mills Learning Methods Test. Found no significant interaction between socioeconomic status and race or sex. The combination method was significantly better than the kinesthetic. In teaching seven-year-old children to learn more words, the visual method was most effective and the kinesthetic method least effective.

Estes, Robert, and **Janet Stewart.** "A Comparison of Visual and Auditory Channels in Learning Disabled and Control Children," paper presented at the annual meeting of the American Educational Research Association, Washington, D.C., April 1975, 17 pp. ED 116420.

Found in comparing 124 fourth graders that the nonlearning disabled children had learned to rely on auditory channels as the dominant mode of processing,

while the learning disabled group was using either the visual or a combination of visual and auditory channels for processing.

Robinson, Helen M. "Visual and Auditory Modalities Related to Methods for Beginning Reading," *Reading Research Quarterly*, 8 (1972), 7-39.
A longitudinal study with 448 children from grades one through three was conducted to determine intelligence and modality preference. Twelve classrooms used the sight approach to reading and ten classrooms used the phonics approach. Subjects high in both visual and auditory modalities scored highest on posttests at end of first and third grades; those with low preference for either modality scored lowest; those with one strong and one weak modality scored between the two extremes. Neither way of teaching reading surpassed the other among pupils with strong or weak modality preferences.

Vandever, Thomas R., and **Donald D. Neville.** "Modality Aptitude and Word Recognition," *Journal of Reading Behavior*, 6 (1974), 195-201.
Determined modality aptitude for 282 second graders and categorized subjects into visual, auditory, and kinesthetic strength. Both visual strength and visual weakness subjects were taught by visual methods. The same procedures were used for auditory and kinesthetic modalities. Results revealed that pupils taught to strength did not learn significantly more than children taught to weakness. Suggested that the best modality based intervention is to vary the cues emphasized.

Waugh, Ruth. "Modality Preference as a Function of Reading Achievement," University of Oregon, 1971. ED 054921.
Found that significantly more five-year-olds exhibited a preference for the visual modality than for the auditory. At seven years of age, the reverse was found. Hypothesized that exposure to the verbal world of the classroom may have changed subjects' modality preferences, which could account for the high correlation between auditory discrimination and reading achievement in first grade.

Diagnosis

The trend in diagnosis is toward early prediction with a shift from testing perceptual factors to increased interest in cognitive and linguistic correlates of reading and learning.

Book, Robert M. "Predicting Reading Failure: A Screening Battery for Kindergarten Children," *Journal of Learning Disabilities*, 7 (January 1974), 43-47.

Investigates early identification of potentially high risk children in the area of reading achievement by following a group of 725 children from kindergarten through second grade. Findings support the use of a battery for initial screening and to determine program placement and planning for children entering formal school programs.

Buktenica, Norman A. "An Early Screening and Task-Learner Characteristic Model of Prevention," paper presented at the annual convention of the American Psychological Association, Miami, September 1970, 14 pp. ED 044436.

Observes that a task-learner characteristic model is an attempt to generate a best-fit blend in instruction; that is, the learner and his characteristics are blended in the most appropriate way with the task to be learned.

Camp, Bonnie W. "Psychometric Tests and Learning in Severely Disabled Readers," *Journal of Learning Disabilities*, 6 (October 1973), 512-517.

Examines the relationship between performance on tests of auditory and visual perception and learning rate in reading lessons. Concludes that perceptual deficiencies may be more frequent in disabled readers, but learning rate and achievement are not related to the degree of perceptual deficiency.

Davis, Gale. "Implications of the Wechsler Intelligence Scale for Children (WISC) Information, Arithmetic, Digit Span, and Coding Subtests of Severely Retarded Readers on Reading Achievement," master's thesis, Western Washington State College, 1973, 55 pp. ED 086958

Subjects were students in the Seattle Public School District No. 1 learning/language disability (LLD) program. Some of the results indicate that the LLD students showed a group pattern of low scores on WISC subtests investigated, but the pattern did not hold for individual cases. The WISC subtest pattern did not vary with degree of underachievement, and WISC fullscale IQ correlated negatively with reading deficit and was apparently a poor measure of reading success.

Davis, Vivian I. "Including the Language Learning Disabled Student in the College English Class," paper presented at the twenty-sixth annual meeting of the Conference on College Composition and Communication, St. Louis, March 1975, 18 pp. ED 114823.

Explores the characteristics and problems many language learning disabled (LLD) and dyslexic students have in college and suggests ways for college English composition teachers to help them. Characteristics of the causes and conditions for dyslexia are discussed and three suggestions are offered for picking up clues about students who may be disabled.

Friedlander, Bernard Z. "Screening and Assessment of Young Children," notes on language for the President's Committee on Mental Retardation Planning Conference, 1972, 8 pp. ED 075066.

Current theory strongly suggests that a continuum of language and related information processing central dysfunctions underlie a broad spectrum of psychological developmental disabilities. Audiometry and optometry are helpful in evaluating the first stage sensory impediments to effective central information processing operations.

Fuller, Gerald B. "Three Diagnostic Patterns for Children with Reading Disabilities," paper presented at the 1974 International Conference of the Association for Children with Learning Disabilities, Houston, 1974, 15 pp. ED 098765.

Reviews attempts to categorize reading disabilities. Describes a means of refining testing procedures to classify three diagnostic patterns of reading disorder, and reports results of application of these procedures with 172 children with reading disorders.

Glazzard, Margaret Leoni. "An Evaluation of Teacher Rating, Reading Readiness, and Kindergarten Achievement as Predictors of First Grade Vocabulary and Comprehension Achievement," doctoral dissertation, University of Kansas, 1975, 138 pp. ED 117668.

A multiple regression equation using analysis of covariance was used to determine which composite predictor variables obtained in kindergarten correlate

maximally with first grade achievement. Results indicate that the teacher rating scale would be a more efficient predictive measure than either the reading readiness test or reading achievement test for both first grade vocabulary and comprehension achievement.

Gold, Lawrence. "Preparing Classroom Teachers to Work with Severely Underachieving Pupils through an Internship in a Regional Learning Disability Center," paper presented at the Fourth Annual Statewide Reading Conference, Grossinger, New York, April 1970. ED 040829.

Discusses the effectiveness of a Title III funded diagnostically oriented center. Internship training consisted of tutoring individually and in small groups; conferring with clinic personnel; preparing diagnostic case studies; administering tests; and holding case conferences, seminars, and inservice colloquia.

Hartlage, Lawrence C., and David G. Lucas. "Group Screening for Reading Disability in First Grade Children," *Journal of Learning Disabilities*, 6 (May 1973), 317-321.

Developed and validated an approach to group screening for reading disability in children beginning first grade. Approach was subsequently administered to 1,132 beginning first graders who were then taught reading by a linguistic, special alphabet, or look-say method. At the end of first grade, significant relationships were obtained between screening predictors and ultimate reading skills and for the interactions of certain screening predictors and teaching methods with reading acquisition.

Hollingsworth, Paul M. "Diagnosis and Prognosis: An Interdisciplinary Approach," paper presented at the annual convention of the International Reading Association, Anaheim, May 1970, 8 pp. ED 042582.

While support for a multicausation theory of reading disability has been general for many years, it has not led to action as reflected in the lack of an interdisciplinary approach to learning disabilities in many schools, reading centers, and clinics. Specific diagnostic information must be obtained if appropriate instructional strategies and remedial methods are to be employed.

Jansky, Jeannette. "Early Prediction of Reading Problems," *Bulletin of the Orton Society*, 23 (1973), 78-89.

A battery of tests (known as the Predictive Index) evolved from 37 kindergarten tests to be the best predicting tests for kindergarten level as indicators of reading, writing, and spelling abilities two and one-half years later. They are: Letter Naming, Picture Naming, Gates Word Matching, Bender Motor Gestalt, and the Binet Sentence Memory. This battery identified 77 percent of the 401 children who were experiencing reading problems by the end of second grade.

Jones, R. Wayne. "The Target Groups: Description of Learning Disabled and Normal Subjects Participating in Prototype Evaluation Studies," paper presented at the Second Conference of the International Scientific Federation of Learning Disabilities, Brussels, January 1975, 11 pp. ED 113859.
Compared the characteristics of 60 learning disabled and 60 normal children (all between eight- and eleven-years-old) participating in the Georgia Reading Research Program. The program evaluated specific curriculum treatments designed to facilitate reading achievement.

Kapelis, Lia. "Early Identification of Reading Failure: A Comparison of Two Screening Tests and Teacher Forecasts." *Journal of Learning Disabilities*, 3 (1970), 185-192.
The Meeting Street School Screening Test (MSSST), Slingerland's Prereading Screening Procedures, and teacher judgment were used in an effort to develop a screening procedure which would adequately predict first year reading performance. These tests were administered to 110 first grade children. The best predictor combination was obtained using the Slingerland and the Language subtest of the MSSST.

Larsen, Janet J., et al. "Factors in Reading Achievement: An Interdisciplinary Approach," *Journal of Learning Disabilities*, December 1973, 636-644.
Presents data on the physical and neuropsychological status, intelligence, level of reading and school achievement, and family background of 100 children (mean age ten years) who had been referred to an interdisciplinary learning disabilities group. Several factors distinguished significantly between subgroups—less difficulty in word recognition for females than for males, and lower oral reading level and full scale IQ scores for grade repeaters compared to nonrepeaters.

Nelson, Hazel E., and **Elizabeth K. Warrington.** "Developmental Spelling Retardation and Its Relation to Other Cognitive Abilities," *British Journal of Psychology*, May 1974, 265-274.
Administered the Wechsler Intelligence Scale for Children and reading and spelling tests to 121 eight- to fourteen-year-old students whose reading and/or spelling abilities were below grade level. Results show that subjects whose spelling retardation was associated with reading retardation differed from those with retardation in spelling alone in the ways in which they misspelled words, suggesting that there are different reasons for these misspellings. Results imply that underlying at least some cases of spelling plus reading retardation is a more generalized language deficiency.

Pittman, Bettie R. "Using Tests as the Key to Diagnosis and Remediation of Reading Disabilities," paper presented at the International Federation of Learning Disabilities, Second International Scientific Conference, Brussels, January 1975, 11 pp. ED 113867.
Argues for the value of using both standardized tests and behavioral principles for the indepth diagnosis and remediation of reading disabilities. An illustrative case study is given.

Rugel, Robert P. "WISC Subtest Scores of Disabled Readers: A Review with Respect to Bannatyne's Recategorization," *Journal of Learning Disabilities*, 7 (January 1974), 48-55.

Reviews twenty-five studies which report WISC subtest scores of disabled readers. The subtests were reclassified into categories labeled spatial, conceptual, and sequential, and disabled readers were ranked as to their relative strengths in these three categories. Disabled readers were highest in the spatial category, intermediate in the conceptual category, and lowest in the sequential category. The high rank in the spatial category suggests that disabled readers are strong in visual-spatial skills. The low rank in the sequential category can be accounted for by deficits in short term memory processes and attentional processes.

Satz, Paul, and **Janette Friel.** "Some Predictive Antecedents of Specific Reading Disability: A Preliminary Two-Year Follow Up," *Journal of Learning Disabilities*, 7 (August/September 1974), 437-444.

Project was concerned with early detection and identification of predictive antecedents of developmental dyslexia at the end of two years. Among the battery of fourteen tests utilized, the two most predictive measures were the Finger Localization and Recognition-Discrimination tests with the former consistently ranking among the most discriminative for predicting kindergarten performance and grade one learning. The Recognition-Discrimination test ranked somewhat lower but its high predictability to later reading achievement demonstrated the importance of visual-discriminative processes in the acquisition of early reading skill.

Seitz, Frank C., et al. "Detection of Learning Difficulties in First Grade: Preliminary Analysis of the Johnson-Kenney Screening Readiness Test," *Psychological Reports*, 33 (August 1973), 219-225.

Administered the Johnson-Kenney Screening Readiness Test to two samples of 171 and 375 beginning first graders. Data indicate a strong relationship between scores on this test and teacher's year-end evaluation of academic progress.

Tower, Dorothy M. "A Kindergarten Screening Index to Predict Reading Failure," *Bulletin of the Orton Society*, 23 (1973), 90-105.

The Predictive Index (Index A) developed by Jansky and deHirsch (1973) was used to identify 91 percent of failing readers in a group of black boys and girls and white boys. Since Index A was found to be inadequate for predicting failures among white girls, a second index (B) was constructed. It identified 73 percent of the failing readers among a group of white girls.

Weimer, Wayne Robert. "A Perceptuomotor and Oral Language Program for Children Identified as Potential Failures," doctoral dissertation, University of New Mexico, 1971, 201 pp. ED 080983.

The deHirsch Predictive Index tests were administered to 645 first graders and found to be accurate. A perceptuomotor and oral language program used

with the identified potential failures was shown to be helpful by the significantly higher scores on posttests. Concludes that a program which matches developmental level and instruction provides the high risk child with entry skills for formal reading instruction.

Zaeske, Arnold. "Motor, Auditory, and Visual Development: A Taxonomy for Diagnosis and Training," paper presented at the Third Annual Plains Regional Conference of the International Reading Association, St. Louis, February 1975, 23 pp. ED 102514.

Taxonomy presented in this paper illustrates the relationship of the sensory skills to both perception and cognition and shows the various facets of the sensory skills in relation to each other and to the perceptual-cognitive process. Provides a skeleton outline of a protocol for the administration of various sensory tests and a representative list of tests which may aid in the diagnosis of the various visual abilities.

Remediation

Remedial programs tend to incorporate findings from interdisciplinary diagnostic procedures centering on individualized sequential task development which pays heed to the affective needs of the reading/learning disabled.

Aberdeen Municipal Separate School District, Amory Municipal Separate School District, and Monroe County School District, Aberdeen, Mississippi. *Group and Individually Prescribed Instruction for Handicapped Children: Instructional Program Model*, final project report. Washington, D.C.: Bureau of Elementary and Secondary Education, 1972, 164 pp. ED 108429.

Presents the final report of a three-year project in which an instructional program model was developed and implemented with 103 educable mentally retarded and learning disabled children (ages six to ten) in three Mississippi schools.

Allen, Jerry C. *Overview of the Georgia Reading Research Program: Special Reading Instructional Procedures for Mentally Retarded and Learning Disabled Children*, presented at the International Federation of Learning Disabilities, Second International Scientific Conference, Brussels, January 1975. Washington, D.C.: National Institute of Education, 1975, 15 pp. ED 112618.

Reports the development of instructional procedures to teach reading skills to learning disabled and mentally handicapped children, based on their particular verbal learning and language characteristics. Focuses on the development of prototypes of teaching procedures based on cross connecting the learning, language, and reading domains.

Bailey, Ralph E., and **Diana G. Bryant.** "The Child Study Center Program," paper presented at the twentieth annual convention of the International Reading Association, New York, May 1975. ED 103821.

Describes the child study center of the Pinellas County, Florida, pupil services demonstration project and elementary secondary education act Title III project. Provides diagnostic, prescriptive, and consultative intervention necessary to assist referred students. Utilizes an interdisciplinary team approach.

Blake, Kathryn, et al. "Year One of a Research Program: Special Reading Instructional Procedures for Mentally Retarded and Learning Disabled Children," *Journal of Research Development in Education*, 6 (1973), 177 pp.

Presents 31 articles describing the first year's activities of a reading research program. The work is in five subprograms: codification of the knowledge base, codification of reading skills, organization of specifications and recommendations, formulation of prototypes, and evaluation of prototypes. Describes the research program, projects within subprograms, and evaluation studies.

Blanchet, Eileen. *When Your Child Can't Read.* San Rafael, California: Academic Therapy Publications, 1972. 58 pp. ED 065838.

Guide for parents suggests that parental assistance include acceptance of the child and his problem and helping the child to cope with anxieties. A careful assessment of the child's gross motor control is required. Developing the child's emotional well being, his sense of accomplishment and of worth, and helping him succeed at a task are all paramount responsibilities.

Brown, Virginia. "Programs, Materials, and Techniques: Reading Miscue Analysis," *Journal of Learning Disabilities*, 8 (December 1975), 605-611.

Reviews, in relation to the learning disabled, the Goodman-Burke reading miscue inventory; a booklet entitled, "Natural Language—A Clinician-Guided Program for Parents of Language-Delayed Children"; and an inservice program in Grand Junction, Colorado.

Bussell, Carol, et al. "Positive Reinforcers for Modification of Auditory Processing Skills in LD and EMR Children," *Journal of Learning Disabilities*, 8 (June 1975), 373-376.

Eighteen subjects were divided into three groups: one receiving token and social reinforcement, another receiving only token reinforcement, and a third receiving neither. Found that the first group made a significant increase in proficiency, the second group made a moderate increase, and the last group did not increase in listening proficiency.

Cahn, Lorynne. "Remediation of the Learning Disabled Child," paper presented at the annual meeting of the National Catholic Education Association, New Orleans, April 197*5*, 20 pp. ED 012499.

Discusses the procedure for a professional assessment of the learning disabled as: 1) noting potentially dangerous signs, 2) teacher referral for a professional

diagnosis, and 3) establishment of a remedial program with emphasis on language.

Campbell, Dorothy D. "Typewriting Contrasted with Handwriting: A Circumvention Study of Learning-Disabled Children," *Journal of Special Education*, 7 (Summer 1973), 155-168.

Investigates the effects of handwriting and typewriting on teaching beginning reading to children with poorly developed motor skills. Compared two groups of 25 learning disabled students. One group used a complex psychomotor task (handwriting) and the other group used a simpler task (hunt-and-peck typewriting) for three months to complete worksheets accompanying reading lessons. Reading gain scores showed that the typewriting students gained significantly more reading vocabulary skills than the handwriting students.

Collette-Harris, Martha, and **Karl A. Minke.** "A Behavioral Experimental Analysis of Dyslexia," paper presented at the International Federation of Learning Disabilities, Second International Scientific Conference, Brussels, January 1975, 26 pp. ED 112621.

Two groups of 6 children (aged nine and ten years) were given either traditional remedial reading treatment or behavioral therapy consisting of the Staats motivated action reading technique. Students receiving the behavioral intervention improved significantly in reading achievement and the dyslexic students improved in several perceptual and attentional measures as well. Results supported the theory that dyslexia can be viewed as a function of deficient learning history.

Demonstration Center for Language-Handicapped Children (Research Monographs). Austin: Texas Education Agency, 1973, 31 pp. ED 096794.

Brief research monographs produced by the demonstration center for language handicapped children. The monographs have been published during two and one-half years of research into teaching strategies for helping LH children.

DiMichael, Eleanor, and **Gavin O'Connor** (Eds). *A Special Study Institute on Oral Language Skills Antecedent to Reading*. Albany: New York State Education Department, 1973, 120 pp. ED 083761.

Presents eleven papers from a study institute for educators of the speech, hearing, and learning disabled. Authors include Thomas Bever, Lois Bloom, Jack Debes, Joan Hyman, Vivian Horner, Phyllis Kornfeld, Mardel Ogilivie, Norma Rees, and Bluma Weiner.

Dusablon, Beth, and **Martha Wade.** "The Acceleration of Learning Rate Implemented in a Multilevel Classroom," two case studies presented to the Fifth Behavioral Convention, 1973, 18 pp. ED 102789.

Two eight-year-old boys, who read 1.7 and 1.5 years below grade level respectively, participated in a program to accelerate their learning rates. At the end of 108 days, reading-learning rates had accelerated to the point that achievement

at grade level was predicted for both boys condensing three years of work into one year and three months for one boy, and two years and four months of work into nine months for the second boy.

Exceptional Children Conference Papers: Learning and Language Disabilities. Washington, D.C.: Bureau of Education for the Handicapped, 1973, 83 pp. ED 078636.

Papers presented at the fifty-first annual International CEC Convention, Dallas, Texas, April 1973. Nine of the papers focus on the prediction and remediation of learning and language disorders in children.

Faulkner, Janice Hardison (Ed.). *Learning Disabilities and the Language Arts: A Survey of Reading and Writing Instruction in the Secondary Schools*, addresses presented at a conference of the English Department of East Carolina University, Greenville, November 1975, 117 pp. ED 110980.

Contains papers of the two-day teachers' conference on language disabilities held at East Carolina University to: 1) provide background information on how children acquire linguistic habits, 2) identify and suggest remedies for certain socioemotional problems which interfere with learning, 3) isolate problems arising from diversity in linguistic competence, and 4) describe reading and writing remedial programs for semiliterate students.

Googins, Duane G. "A Resource Unit Model Approach for Servicing Children with Learning Problems," paper presented at the nineteenth Annual Convention of the International Reading Association, New Orleans, May 1974, 10 pp. ED 095486.

Provides an overview of the reasons why a model change for servicing children with specific learning needs was recommended for the St. Anthony Village-New Brighton School District, an overview of the resource unit model proposed, and a summary report of the resource units within a small district's elementary and secondary schools based on data acquired the first semester of the 1973-1974 school year.

Hallenbeck, Phyllis N. "Remediating with Comic Strips," *Journal of Learning Disabilities*, 9 (January 1976), 11-15.

Presents ideas for the use of comic strips in remediation work with learning disabled children. Some benefits are: development of conceptual or logical abilities, left-to-right progression, discrimination of important details, distinguishing fantasy from reality, and comprehension of social situations.

Hammill, Donald D., and **Stephen C. Larsen.** "The Effectiveness of Psycholinguistic Training," *Exceptional Children*, 41 (September 1974), 5-14.

Reviewed the findings of 16 studies that tested the effectiveness of the Peabody Language Development Kits in improving the skills necessary to achieve on the ITPA. Overall conclusions were that the kit was not particularly effective in stimulating language, since only about one-third of the researchers found the program to be beneficial.

Harris, Albert J. "Ten Years of Progress in Remedial Reading," *Journal of Reading*, 21 (October 1977), 29-35.
Discusses governmental intervention and support, the impact of the learning disabilities movement, the difficulties of defining reading disability, developments in the causation of reading disabilities, diagnostic and prescriptive reading instruction, and the early detection of potential disabilities.

Heine, Lucy, and **Betty Rahaim.** "Prescriptive Education: Diagnosis and Implementation," 1973, 23 pp. ED 073606.
Presents a rationale for a prescriptive teaching approach and discusses materials appropriate to both the diagnostic and instructional phases of prescriptive teaching. Instruments for assessing various abilities are described and contemporary teaching approaches reviewed.

Helton, George B., Henry W. Morrow, and **James R. Yates.** "Grouping for Instruction 1965, 1975, 1985," *Reading Teacher*, 31 (October 1977), 28-33.
Reviews practices characteristic in 1965 for grouping learning disabled students and compares them with current practices and results of a seminar exercise in grouping conducted at a learning disability conference in Texas in 1975. Generalizing to 1985 from the simulation exercise, authors suggest that grouping practices may be flexible enough to allow teachers to select students, teaching techniques, and instructional materials.

Hill, Mildred G., et al. *The Development and Implementation of a Minimum Objective System in the Hinesburg Elementary School*, a report. Washington, D.C.: Bureau of Education for the Handicapped, 1974, 107 pp. ED 095693.
Reports the development and one year implementation of a minimum objective system, in areas such as language arts and mathematics, with the kindergarten through grade six classes at a school in Vermont. Implementation involves charting progress of all students toward stated objectives.

Improving Reading Programs for Emotionally Handicapped Children, Proceedings and Highlights of a Special Study Institute, Medina, New York, May 1971. Albany: New York State State Education Department, 1971, 78 pp. ED 059555.
Presents six speeches given at an institute on reading programs for emotionally handicapped children. Speakers included Jules Abrams, Clifford Kolson, Winton Buddington, William Q. Davis, Joan Hyman, and Gita Kornfeld.

Isgur, Jay. "Establishing Letter-Sound Associations by an Object-Imaging-Projection Method," *Journal of Learning Disabilities*, 8 (June/July 1975), 349-353.
Ten functionally nonreading subjects were taught letter-sound associations by an object-imaging-projecting method utilizing 26 actual objects found around the home, each object having a name whose beginning sound is a letter sound, and having a form similar to the letterform.

Journal of Research and Development in Education, Vol. 9, Monograph, 1976, 115 pp.
A report of the third year of a research program involving special reading instruction procedures for mentally retarded and learning disabled children. Contains more than fifty research reports.

Kelly, Joseph J., et al. *Readiness Continuum*. Enola, Pennsylvania: East Pennsboro Area School District, 1973, 42 pp. ED 107029.
Curriculum guide for the readiness level of the child who is hyperactive, a behavior problem, or unable to sustain attention. Areas are divided into phases with instructional objectives and activities listed.

Kerstiens, Gene (Ed.). *Reading Update: Ideals to Reality*, proceedings of the seventh annual conference of the Western College Reading Association, Oakland, California, April 1974, 201 pp. ED 114796.
Contains papers on aphasia among college students, learning skills center, microcounseling training model, and screening for vision and perception disabilities.

Klann, Harriet, et al. "The Effects of Utilizing Teen Tutors in a Fourth and Fifth Grade Individualized Reading Program," 1972, 37 pp. ED 102792.
Fifteen high school students served as volunteer tutors in an individualized reading program for 14 fourth and fifth grade pupils unable to succeed in reading skills at grade level. From September to May, most students advanced 2 to 3 years in reading; least advancement was 1.7 years and the greatest was 3.7 years.

Kline, Carl L., and **Carolyn L. Kline.** "Follow-up Study of 216 Dyslexic Children," *Bulletin of the Orton Society*, 1975, 127-144.
Compared 92 dyslexic children who received the Orton-Gillingham Tutorial Program with 29 who did not. Found that, in general reading skills, the tutored group showed a substantial improvement over the untutored group. The length of tutoring seems to be an important factor.

Lewandowski, Glen. "Learning Disabilities Certification: A Needed Revision," *Reading Teacher*, 31 (November 1977), 132-133.
States that after all the special diagnosis, the treatment for the specific learning disabled child involves primarily what reading teachers do with remedial readers. Suggests that for specific learning disabled students whose primary problem is reading, diagnosis and remediation should be performed by reading specialists.

Lovitt, Thomas C. "Applied Behavior Analysis and Learning Disabilities: Specific Research Recommendations and Suggestions for Practitioners," *Journal of Learning Disabilities*, 8 (October 1975), 504-518.
Describes the applied behavior analysis research method and how it can be used to investigate general curricular topics, emphasizing specific curricular areas

of importance to learning disabled youngsters: reading, spelling, penmanship, writing, and arithmetic. Presents a short description of current ABA research with suggestions for teaching derived from the research.

Lovitt, Thomas C., and **Cheryl Hansen**. "The Use of Contingent Skipping and Drilling to Improve Oral Reading and Comprehension," *Journal of Learning Disabilities*, 9 (October 1976), 481-487.

Permitted students one to three years behind in reading to skip portions in their readers if they surpassed certain standards. If they fell below specific levels, drill in that particular area was given. Concludes that both skipping and drilling improved oral reading and comprehension.

Lundquist, Gerald W. "Prototypes for Teaching Word Meaning Skills Homonyms to Learning Disabled Children," paper presented at the Second Conference of the International Scientific Federation of Learning Disabilities, Brussels, January 1975, 6 pp. ED 113862.

Summarizes four studies which compare the ability of learning disabled and normal students in learning the meanings of homonyms when presented in various modes. Results indicated that normal students learned at a higher rate than LD students, that LD students needed to be provided with a pattern for organizing information, that context cues were a determiner of effective learning for both normals and LD pupils, that context served as immediate reinforcement for both groups of pupils, and that paired homonyms were learned more readily than homonyms presented in random sequence.

McBride, Ralph D. "Prototypes for Teaching Sentence Comprehension Skills to Learning Disabled Children," paper presented at the Second Conference of the International Scientific Federation of Learning Disabilities, Brussels, January 1975, 60 pp. ED 113863.

Summarizes eight studies comparing aspects of sentence comprehension skills in normal and learning disabled children. Concludes that normal children score higher in sentence comprehension, regardless of the type of reading task, than do LD children; the rate of learning over the first trials is higher for normals than LD children, though the learning rate of LD children may continue to increase over trials after the normals' learning rate has levelled off; passive negative questions are as easy to comprehend as kernel sentences for both LD and normal children; and visual phrasing cues do not affect sentence comprehension.

McCarthy, Francis E. "Remedial Reading and Learning Disabilities in Battle," *Reading Teacher*, 31 (February 1978), 484-486.

Discusses interdisciplinary stress within the fields of remedial reading and learning disabilities, points to be considered in this power struggle, and resultant implications. Suggests that, in light of U.S. Public Law 94-142 (Education for All Handicapped Children Act of 1975), the child with reading problems

also needs involvement with a program dealing with persisting life needs, personal adjustment, and occupational adequacy. Offers a view of corrective reading programs as intermediate steps in a "continuum of services" model of special education.

McCoy, Lois E. "Braille: A Language for Severe Dyslexics," *Journal of Learning Disabilities*, 8 (May 1975), 288-292.
Suggests that Braille be considered as an alternative language for the severely learning disabled student as it is a ready-made language which uses a completely different pathway than that of auditory-visual input.

Miller, Rozelle J., et al. *A Teachers' Guide for Exceptional Children and Youth* (Parts 1 and 2). Washington, D.C.: Bureau of Education for the Handicapped, 1973, 912 pp. ED 100078.
Presents a teaching guide designed for use in American dependent schools in the European area. Provides a developmental task analysis approach for teaching elementary and secondary level mentally retarded and learning disabled students.

Moore, William, et al. *A Study of the Extreme Learning Problem Program in Oregon: 1971-72, 1972-73.* Portland: Oregon State Department of Education, 1973, 33 pp. ED 107071.
Found that pupils in Extreme Learning Problem classes tended to make, on the average, more than a year's growth in reading as measured by the Metropolitan Reading Test and pupils in the primary grades tended to make more reading progress. The most successful ELP teachers used instructional materials in conjunction with regular classroom teachers.

Morsink, Catherine. "Some Teacher Competencies that May Influence Disabled Readers' Learning of Word Attack Skills," 1976, 13 pp. ED 126475.
Ten supervising teachers in ten elementary classrooms and thirty-one student teachers engaged in a year-long study comparing three methods of teaching reading to LD students. Measurement and analysis of LD student reading achievement showed that three competencies were frequently absent in the least effective classrooms: matching instruction to objectives, positive reinforcing, and overlearning.

Moyer, L.B., and P.L. Newcomer. "Reversals in Reading: Diagnosis and Remediation," *Exceptional Children*, 43 (April 1977), 424-431.
Found that reading mirror images has little to do with perceptual dysfunction. Proposed that reversals in reading are caused by a child's inexperience with directionality. Reviewed studies which demonstrate how four- and five-year-olds learn to distinguish between reversible letters through proper instruction as opposed to perceptual training.

Murray, Beulah B. *Individualized Amelioration of Learning Disability through Parent-Helper-Pupil Involvement* (final report). Washington, D.C.: National Center for Educational Research and Development, 1972, 79 pp. ED 068497.

Parents were instructed in teaching their children in the area of reading. Differences in gain scores and learning rate on the reading instruments tested the hypotheses of efficacy of parental help for 26 second graders. Improvement on learning rate for the 14 experimental subjects was significant. It is concluded that some parents can be good remedial resources for their children's learning difficulties.

Project Success for the SLD Child, Language Arts Guide, Wayne Carroll, Nebraska, Public Schools. Washington, D.C.: Bureau of Elementary and Secondary Education, 1974, 109 pp. ED 089484.

Thirty-three basic lessons stressing phonics, a daily writing program, and ideas for creative writing are developed through Title III grant for language handicapped elementary level students.

Reading Difficulty and the Intelligent Underachiever, report of proceedings of a seminar for teachers convened by the Specific Learning Difficulties Association, Victoria, Australia, 1970, 87 pp. ED 094532.

Presents five papers given at a seminar focusing on specific learning difficulties.

Resource Aid of Selected Materials for Remediation of Learning Disorders, New England Materials Instruction Center. Washington, D.C.: Bureau of Education for the Handicapped, 1971, 203 pp. ED 052580.

Resource guide helps formulate diagnostic profiles for children with specific learning disabilities, analyzes subsets of well-known batteries, and classifies materials to match areas of strength and weakness in learning.

Resource Services: Preliminary Curriculum Guide for Reading, Mathematics, Spelling, Writing, and Perceptual Development. Spring, Texas: Klein Independent School District, 1974, 222 pp. ED 107025.

Provides a listing of skills, tests, and resource materials and activities to be used with elementary grade learning disabled students to develop reading, mathematics, spelling, writing, and perceptual skills.

Richmond, Bert O. "Prototypes for Teaching Word Recognition-Sight Vocabulary Skills to Learning Disabled Children," paper presented at the International Federation of Learning Disabilities, Second International Scientific Conference, Brussels, January 1975, 7 pp. ED 113870

Reviews research on the acquisition of sight reading vocabulary by learning disabled and normal children. Studies are explained to have measured the effects of such variables as mode of presentation, amount of practice, and redundancy. Reports the general conclusion that LD children do not perform

as well as normal children on the discrimination learning (sight vocabulary) tasks, but that treatment and practice produce an improvement in reading skills for the LD child.

Rosner, Jerome. "Changes in First Grade Achievement and the Predictive Validity of IQ Scores as a Function of an Adaptive Environment," *Educational Technology*, 14 (1974), 32-36.

Defines some of the elements of an adaptive instructional system wherein individual differences of the learners are a critical variable. Presents data showing significant gains in first grade achievement that cannot be explained by IQ scores but, rather, appear to be related to the extent to which an adaptive mode of instruction has been achieved.

Rosner, Jerome. *The Development and Validation of an Individualized Perceptual Skills Curriculum*. Pittsburgh: Learning Research and Development Center, University of Pittsburgh, 1972, 113 pp.

Goals of the Perceptual Skills Curriculum Project were to: 1) identify perceptual skills which appear to be directly related to the tasks of reading and arithmetic at the primary level; 2) determine whether such skills can be trained effectively; 3) determine whether the effect of that training can be measured in classroom behaviors; and 4) given affirmative responses to all of the above, describe the training in a way that will allow it to be implemented in the public school classroom.

Rosner, Jerome. "Application of the IPI Model to a Perceptual Development Curriculum," in John I. Arena (Ed.), *Meeting Total Needs of Learning Disabled Children: A Forward Look*, proceedings of the Seventh Annual International Conference of the Association for Children with Learning Disabilities. San Raphael, California: Academic Therapy Publications, 1971, 95-107.

Describes how the Individually Prescribed Instruction (IPI) model for individualization was applied to a perceptual skills curriculum. The rationale for its use is presented, as are examples of application.

Scarbrough, Annabell T. *Guiding Growth in Reading: Reference Manual for Teachers of Children with Learning Problems in the Regular Classroom Grades 1-4*, 1973, 80 pp. ED 090726.

Developmental, sequential guide for teaching reading at the primary, intermediate, and advanced levels. Material for each level is organized according to behavioral objectives, motivating activities, content (or theoretical base) and appropriate learning aids, and learning activities (or practical application).

Schanzer, Sharon S. "Independent Reading for Children with Learning Disabilities," *Academic Therapy*, 9 (Fall 1973), 109-114.

Describes a reading program utilizing structure and positive reinforcement with learning disabled children ages nine to thirteen.

Serwer, Blanche L., et al. "The Comparative Effectiveness of Four Methods of Instruction on the Achievement of Children with Specific Learning Disabilities," *Journal of Special Education*, 7 (Fall 1973), 241-249.

Tested the effectiveness of the direct remediation technique (Distar), the indirect method, the combined method, and no remediation (controls), on four groups of children with specific learning disabilities (N 62). The indirect and combined groups showed better acheivement during the experimental year than did the direct and control groups.

Silberberg, Norman E., et al. "Which Remedial Reading Method Works Best?" *Journal of Learning Disabilities*, 6 (November 1973), 547-556.

Exposed four groups of third grade remedial class children to different remedial reading methods for one year. The three remedial approaches involved were the visual-emphasis, the auditory-phonic, and the kinesthetic. Although the usual spurt in tested reading score was observed at the conclusion of that experience, a six month follow up indicated that improvement in tested reading was transitory.

Steiner, Rollin, et al. "Comprehension Training and Identification for Poor and Good Readers," *Journal of Educational Psychology*, 62 (1971), 506-513.

Comprehension training is effective for good readers, with poor readers showing no improvement in identification after being given contextual information. Poor readers also fail to utilize syntactic and contextual cues in the material and seem to treat words as unrelated items in a series.

Tonra, Robert M. "Learning Options: Will Students Use Them?" *Journal of Learning Disabilities*, 7 (May 1974), 284-286.

Notes that even at the college level, reading is not the only learning option open for students. There is evidence that, if given the opportunity, students will choose the option most comfortable to them. Newer technologies permit multimodal learning and these are cost-effective if the program is continued over time. Technical and procedural modifications are a must in a multimedia program.

Treatment

Drug therapy and other psychoeducational approaches with children having reading/learning problems remain areas of interest as reflected by the following studies.

Bosco, J. "The Use of Ritalin for Treatment of Minimal Brain Dysfunction and Hyperkinesis in Children," 1972. ED 076540.

Review of research indicates there are no consistent beneficial results when Ritalin is used to treat hyperactive children. Other controversial factors are frequency and severity of side effects due to use of Ritalin. Concludes that implications in the use of Ritalin are weighty and require further detailed studies by physicians.

Campbell, S., et al. "Cognitive Styles in Hyperactive Children and the Effect of Methylphenidate," *Journal of Child Psychology and Psychiatry*, 12 (1971), 55-67.

Explores the cognitive style of hyperactive children which includes impulsiveness, poor attentiveness in ability to isolate embedded figures, and slower response to simple tasks. The use of Ritalin was associated with less impulsivity (an improved ability to inhibit incorrect responses). Research team concludes that the review of research on the effectiveness of Ritalin does not show clear and consistent benefit resulting from its use.

Cole, Sherwood. "Hyperkinetic Children: The Use of Stimulant Drugs Evaluated," *American Journal of Orthopsychiatry*, 45 (January 1975), 28-37.

Notes that daily medication in the case of Dexedrine or Ritalin places certain constraints on the child, usually with good effect. The routine enforced by the medication requires that the child be at a certain place at a specific time. Such an enforced routine may produce a feeling of security and predictability.

Feingold, Ben. "Hyperkinesis and Learning Disabilities Linked to Artificial Food Flavors and Colors," *American Journal of Nursing*, May 1975, 797-803.

Conducted five separate dietary experiments with 194 learning disabled children. All children were given a diet eliminating artificial coloring, flavoring, and natural salicylate radical. Results indicate that about 50 percent of the children responded to strict elimination diet with initial changes including a loss of hyperactivity, aggression, and impulsiveness. Degrees of speed and success of the experiment appear to depend on the age of the child; the three- to five-year-old range showed most improvement.

Hollander, Sheila K. "Monitoring the Medical Management of Students," *Reading Teacher*, 31 (October 1977), 4-5.

Observes that the teacher's traditional role has been expanded to include supervision of medication intake of youngsters with symptoms of minimal brain dysfunction interfering with learning without being provided with instructions regarding the effects of the various drugs. Suggests that teachers be fully informed and properly trained to help monitor the results of student medication, which would also be conducive to the development of interdisciplinary cooperation and professional respect.

Satterfield, James, and **Dennis Cantwell.** "CNS Function and Response to Methylphenidate in Hyperactive Children," *Psychopharmacology Bulletin*, 10 (October 1974), 36-38.

Four intensive studies demonstrated that hyperactive children, usually with low CNS arousal and low CNS inhibitory level, respond well to drug therapy. The most common drugs used are dextroamphetamine and methylphenidate hydrachloride (Ritalin) and imipramine (Tofranil). These drugs have been clinically successful in minimizing hyperactivity and distractibility, and in increasing attention span, thus helping hyperactive children to learn.

Ziebel, Bebe. "The Reading Teacher as Guidance Counselor," *Journal of Reading*, 18 (October 1974), 44-49.

Proposes that the role of guidance counselor be given to the special reading teacher. Stresses counselor's positive regard, empathy, and genuineness as reinforcing pupil's self-concept, thereby reducing anxieties. Suggests group counseling as a way of meeting pupil's needs within the reading teacher's function and time limitations and according to Carl Rogers' structured permissive framework.